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INSANITY IN CHILDREN.

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Moreau (de Tours)[1] with equal force and truth, strikes at the grave psychiatric error involved in the denial by pediatrists, of intellectual, emotional and moral affections of physical origin in the child. Such disordered mental phenomena were explained as immoralities, as eccentricities, or as the result of defective education and training. From the time of the great physician of Cos, instances have been cited reversing these opinions. Not, however, until school over-pressure became a burning question was the subject regarded as a topic of general medical interest. The psychological state of the normal child even is much misunderstood. Meynert,[2] with exceeding fullness and subtlety, thus outlines the evolution of psychological processes in the child:

Kussmaul has shrewdly indicated certain perceptions and movements common to the fetus in utero, which feeds itself, as it were, by swallowing amniotic fluid. He also indicates that there may be special motives, such as the more stimulating taste of the fluid after occasional depletion into it of the allantois, which induce swallowing. Here, then, there are two alternatives; the fetus swallows or it does not swallow. Fetal consciousness is already presupposed, which would exist, however, under circumstances that give but little opportunity for perception. The newborn infant at once discovers signs by which it distinguishes between one set of perceptions and another. One set of perceptions helps it to define the circumference of its own body; another set belongs to the world beyond it. However obtuse this perception may be, though the child may at first not be able to discriminate between the various impressions of space, still it is certain that the child's perception of its own body circumference is established very early. Among other means by which it learns to distinguish between impressions received from its own body and the outer world are these: contact of a strange finger with its own skin excites but one tactile sensation; contact between two parts of its own body excites two tactile sensations; one from the touching, the other from the touched part. Furthermore, a number of strange auditory sensations strike the ear of a child, but only the sound of its own voice is accompanied with muscular sensations, and so the attendant muscular sensations help the child to discriminate between movements of its own body and any other movement it may see. There is no order of movements, which, under the cover of instinct, can be pushed in between conscious and reflex movements. The first instinct of a child would be the instinct for food, but the origin of that has been discussed. There is absolutely nothing in the sensation of hunger which would acquaint the child with the means of remedying this pain. It obtains naught but the concept of pain. In the general restlessness it displays and in the convulsions ultimately resulting from anemia there is nothing which could be likened to an instinct for food. If the child has not to depend on its own resources but has a nipple put into its mouth then the sensation thus excited starts the reflex mechanism of sucking. The child has thus acquired the concept that the sensation of satiation is connected with the act of sucking, and these two sensory memories are associated with the innervation sensation aroused by sucking, and probably by the scent of the mother's breast. That a child should suck at every finger may be attributable to a reflex mechanism, but the sucking of the child in dreams proves that the act of sucking has produced images which have been registered in the cortex. The factors of this primary abstract ego are not definitely defined. . . . . The nature of the ego does not depend upon any definite order of memories, but is determined simply by the most firmly fixed memories. . . . . As soon as movements of aggression have taught the child to take hold of things it is evidently under the impression that it is living in a world of sweets; it takes everything to the mouth and licks it. A later aggressive movement—kissing—like the first sucking movements, is probably based upon the act of bringing an attractive object to the mouth. This latter movement is clearly dependent upon a powerful secondary presentation aroused by its impressions, just as the sucking movements during sleep denote secondary presentations excited in the course of dreams. . . . . Space vision in the child excites movements of aggression which aim at the possession of the thing it sees, but as it lacks the power of locomotion it has no conception of distance. These aggressive reflexes of the upper extremities are no more coördinated in space than the movements of the eyes are before the child has learned to see, and through irradiation these movements become general, leading to a tossing of the whole body, to kicking with all fours and to cutting of grimaces. These movements though extravagant are not spasmodic, but must be regarded as results of cortical impulses interfered with by cortical irradiation. The acoustic nerve also takes part in reflex impulses; the child that hears others speak or perceives other sounds and noises has the desire to bring forth the same sounds and noises. As its cortical functions improve, it develops the secondary idea that the sounds which it brings forth are similar to

[1] Folie chez les Enfants. [2] "Psychiatry," Sachs' Translation.

those of ordinary speech. Wundt correctly remarks that the speech of animals consists of so-called sensory sounds, and this is true of children before they have acquired the faculty of imitating syllables. In all aggressive movements the child over estimates the possibilities of its powers. Experience and an improvement of the power of imitation correct these false conclusions. As soon as the child has reached that age when all cortical fibers acquire their white substance, purely reflex movements and those due to irradiation diminish in number. In the child the expression of emotion may vary much. Under the influence of the apnœtic effect of functional hyperemia attendant upon pleasurable emotions, there will be movements of aggression bespeaking the force of the child's own personality, or there will be spasmodic movements of repulsion (due to irradiation) such as screaming and crying. All these expression movements, whether due to irradiation or not, dispatch sensations of innervation to the cortex, which sensations are there turned into "special memories" and serve later on as impulses, starting the entire groups of movements which are involved in expression. Consequently, these movements of expression result primarily from stimulation of subcortical centers, just as simple forms of reflex movements serve as the foundation upon which the structure of more complex, conscious movements is raised. As soon, however, as these irradiatory impulses, which excite the mechanism of expression, are put under control of an organ of motor coördination, they acquire secondarily a higher value as psychical factors of expression. In the child, pleasurable emotions result in general movements of the entire body. Even in the adult, who dances for joy or performs other extravagant movements, occurs a repetition of these primitive mimical movements of the child. A state of excessive pleasurable emotions may pass into a condition of maniacal excitement as a result of dilatation of the arterial network of the brain, or a state of pleasurable confusion may end in a transitory swoon. The doctrine that ideas are inherited and are not the result of perception and association, that movements, even mimical ones, are the result of innate motives and have nothing to do with imitation and early reflexes can hardly be applied to man. Not even the upright gait is innate; it is acquired with difficulty only through imitation and cortical coördination.

Dickson has found insanity in children characterized by subacute maniacal symptoms, garrulity or loquacity, or melancholiac depression associated with homicidal or suicidal tendencies. The children are often bright, but irritable and wayward.

As Perez has shown, anger appears very early in children. In the first two months the child shows by movements of its eyelids and hands strong anger when the attempt is made to bathe it or to take something from it.

According to Fenelon, jealousy is much more violent in children than is usually suspected. Bourdin claims that all infants are liars. He, however, ignores the fact that the weak inhibitions of the child prevent it from distinguishing clearly between the subjective and the objective—between its wishes and facts. This condition is essentially one of mental instability and underlies the mental states at the foundation of terror and suspicion. As might be expected, cruelty is very frequent in childhood. Not from an innate tendency to cruelty *per se* as claimed by La Fontaine and Montaigne, but, because as has been shown by Meynert, the feeble secondary "ego" does not so dominate the primary "ego" as to enable it to recognize the feelings of others. In certain cases this secondary "ego" is not developed, because of inherited, congenital or acquired defect or perverted training.

Motor explosions, for reasons already pointed out by Meynert, readily occur in children, whence the fact noted by Dr. Grace Peckham Murray[3] that neuroses in children tend to be motor rather than sensory, since the reflex arcs of which the motor strands form a part are earliest perfected, so that when a sensory stimulus sets free a nerve energy it is likely to overflow into motor paths. Intellectual comprehension of sensation, and consequently of pain is the last to be developed; in consequence, severe nervous shocks which would give rise to exquisite pain in the adult, result in a motor neurosis in the child.

Motor neuroses, as already stated, readily pass into the motor expressions of psychical disturbance; and from these psychical disturbances intensified by the feeble power of discriminating between the subjective and objective, result the hallucinations so frequently noted in children.

The disturbance of the feeble ego results in the appearance in the mental foreground of the child, of cruelty, mendacity, and other primitive instincts. Abulic speech, as Dr. J. H. Kellogg has shown, may occur in the instinctive insanities of childhood from morbid tendencies to commit improprieties of speech. (*American Journal of Insanity*, 1892.)

The child, therefore, gradually acquires a series of checks on its explosive tendencies and the egotism shown in the over estimate of the possibilities of its powers. These elements underlie the mental state of childhood, which, according to Moreau (de Tours)[4] is characterized by an absence of reflection and self-control, by spontaneous and capricious actions, by dominance of immediate sensory impressions and absence of regard for the future, by desire for power and tyrannical use of it. In a study of these phenomena, classification becomes a necessity and the following modified from Moreau (de Tours), is an excellent basis for such study, especially if it be remembered that even the "pure neuroses" in childhood are often attended by mental symptoms. The classification of the psychoses is based on Spitzka.

- **Neuroses.**
  - Convulsions.
  - Nervous laughs.
  - Nervous coughs.
  - Hiccough.
  - Stuttering.
  - Neuralgias.
  - Ecstasy.
  - Hysteria.
  - Chorea.
  - Epilepsy.
  - Somnambulism.
- **Psychic Types.**
  - Hallucinations.
  - Anomalies of character.
  - Aberrant sentiments.
    - Love.
    - Jealousy.
    - Anger.
  - Imperative conceptions.
    - Pure.
    - Attended by impulsive acts.
      - Arson.
      - Suicide.
      - Violence.
      - Homicide.
      - Alcoholism.
      - Theft.
      - Rape.
      - Non-criminal acts.
  - Idiocy.
  - Imbecility.
  - Night terrors.
  - Mania.
  - Acute confusional insanity.
  - Melancholia.
  - Transitory frenzy.
  - Stuporous insanity.
  - Katatonia.
  - Paranoia.
  - Periodical insanity and hebephrenia.

The imperfect coördination of the slowly acquired inhibitions is readily upset, whence occur states of uncertainty and resultant terror. "Night terrors" were the earliest morbid mental phenomena noticed in children. "Pavor nocturnus" described by Hippocrates was worthy the clinical insight of the great physician of Cos. The emotion of fear, as Meynert has shown, characterized by greater excitement and attention, is probably the neurosis of a subcortical center (of the medulla) which defies cortical inhibition. Movements of flight may therefore be started by allied associations in the absence of real danger, and even against the will this underlies the conditions found in "night terrors" and explains the running which so frequently precedes epilepsy in children; the so-called epilepsia cursiva. The motor elements in childhood's neuroses are therefore not so pure as they at first seem. The sensory inhibitions which enabled the child to determine its own movements from those of others remain dormant, it is true, to spring to the surface in constitutional disorder, not as inhibitions but as sensory accessories.

Among the earliest manifestations of morbid mental activity in children are hallucinations which depend on already registered perceptions. Hallucinations of all the senses may occur, but those of sight are most frequent; next, those of hearing, while taste and smell but exceptionally occur. These hallucinations are readily excited by simple causes, like indigestion, and are present in night terrors which are an intensification of the hypnogogic hallucinations that occur in many adults on awakening. In many instances even moral agencies produce sudden explosions of mental disorder.

The inherited tendencies of childhood predispose to these attacks. As Clouston has shown, neuroses and psychoses not requiring hospital treatment are by no means uncommon in the "too sensitive" child with hereditary taint. Children of this class take "crying fits" and miserable periods on slight or no provocation. These tendencies are aggravated by the results produced by the maternal mental state. The silly threats of mothers often cause such brief attacks. He has seen a boy of five become intensely depressed, cry and moan for hours because of the "hell" which its mother described as the portion of bad boys who tore their pinafores, sinned against God, and disobeyed their mammas.

In predisposed children, subjective frights and unpleasant dreams originate persistent anxieties and hebetude. In such children, precocity, over-sensitiveness, unhealthy strictness in morals and religion for a child, a too vivid imagination, want of courage, thinness and craving for animal food are common characteristics. These children are over-sensitive, over-imaginative, and too fearful to be physiologically truthful, and tend, under fostering, to be unhealthfully religious, precociously intellectual, sensuously artistic, and hyperesthetically conscientious. He points out that what he calls "delirium of young children" is relatively frequent. "In most cases it is a pure delirium, without consciousness, attention, or memory, but in some instances there are frightful hallucinations. In others, an excited melancholia of short duration." "The same children who suffer from delirium at low temperature are those subject to 'night terrors' chorea, epilepsy, hysteria, and even adolescent insanity (hebephrenia) at later ages."

Krafft-Ebing state that "night terrors" are peculiarly frequent in neuropathic children.

Dreams, somnambulism, and night terrors, according to C. P. Putnam,[5] find their explanation in a loss of the higher and exaltation of some of the lower cerebral functions. The conscious life of the individual is in the realm of the higher functions, which exercise an inhibitory influence on the low.

Steiner[6] believes that of the immediate causes of "night terrors" and the resultant states, the most important are a bad mental training, ghost description ere retiring, and going to bed in the dark, all of which are calculated to stimulate the lively intelligence of children already timid and excitable.

In regard to the frequency, etiology and types of the various psychoses and neuroses much variance of opinion exists. The frequency with which chorea occurred among degenerates led to an expression of opinion that all choreic children were morally imbecile. The question will, therefore, naturally arise as to the existence of degeneracy in the family of a given child. "Degeneracy," according to Morel[7] the apostle of the doctrine, "is the result of a morbid influence, physical or moral. An essential characteristic of degeneracy is hereditary transmission, but of a grave type and more far reaching in consequence than ordinary heredity." This factor plays an exceedingly important rôle in the disorders of childhood. In infancy, are born errors and prejudices almost never uprooted, above all credulity. Although impressions are mobile, still something remains therefrom for the future. The child is dominated by the most pressing appetite and instability resembling that of the ape (as described by Milne-Edwards), or the hysteric is in the main uppermost in childhood. Cabanis has shown that there is no moral distinction between the psychic life of the sexes in childhood at the outset. Upon the power of acquiring checks, turns the after-life of the child and this power is lessened by the cortical deficiencies due to degeneracy which also creates the predispositions to which reference has already been made. Under "insane diathesis" or "insane temperament" has been placed a congenital predisposition most graphically portrayed by Dr. C. F. Folsom:[8]

"It is closely allied to insanity and the neuroses, and at the critical periods of life is exceedingly apt to develop into one of them. It is congenital or due to early interference with normal brain development. It shows itself in childhood and infancy by irregularity or disturbed sleep, irritability, apprehension, strange ideas, great sensitiveness to external impressions, high temperature, delirium or convulsions from slight causes, disagreeable dreams and visions, romancing, intense feeling, periodic headache, muscular twitching, capricious appetite and great intolerance of stimulants and narcotics. At puberty developmental anomalies are often observed in girls and not seldom perverted sexual instincts in both sexes. During adolescence there are often excessive shyness or bravado, always introspection and self-consciousness and sometimes abeyance or absence of the sexual instinct which, however, is frequently of extraordinary intensity. The imitative and imaginative faculties may be quick. The affections or emotions are strong. Vehement dislikes are formed and intense personal attachments result in extraordinary friendships which not seldom swing around suddenly into bitter enmity or indifference. The passions are unduly a force in the character which is said to lack will-power. The individual's higher brain centers are not well inhibited and he dashes about like a ship without a rudder,

[3] Journal of Mental and Nervous Diseases, 1884.
[4] De la Folie chez les Enfants.
[5] Keating's Cyclopedia.
[6] Diseases of Children.
[7] Traité des Degenerescences Physiques, etc.
[8] Pepper's "System of Medicine."

fairly well if the winds be fair and the seas calm, but dependent on the elements for the character and time of the final wreck. Invention, poetry, music, artistic taste, philanthropy, intensity and originality are sometimes of a high order among these persons but desultory, half finished work and shiftlessness are much more common. With many of them concentrated, sustained effort is impossible and attempts to keep them to it impossible. Their common sense, perception of the relations of life, executive or business faculty and judgment are seldom well developed. The memory is now and then phenomenal. They are apt to be self-conscious, egotistic, suspicious, and morbidly conscientious. They easily become victims of insomnia, neurasthenic, hypochondriacal, neurotic, hysterical or insane, and they offend against the proprieties of life or commit crimes with less cause or provocation than other persons.

At the same time that many of them are among the most gifted and attractive people in their community, the majority are otherwise and possess an uncommon capacity for making fools of themselves, being a nuisance to their friends and of little use to the world. . . . If such children could be placed in the hands of judicious and experienced physicians much better results could be obtained and the downward tendency might be stopped."

Among those beings termed by him the "neurotics" Dr. E. S. Talbot[9] has found anomalies of the jaws and teeth exceedingly frequent. Such stigmata of degeneracy were to be expected. The "lithemic" child, of pediatrists, belongs but too often to this class, the lithemia being an expression of degeneracy. Here, also, very often belong the infant prodigies like the two-year-old negro calculator described by Dr. S. V. Clevenger,[10] and the host cited by Moreau de Tours. Such precocity is a mental stigmata and, like early puberty appears so often among the degenerate as to give rise to the proverb, "a wit often is a fool at thirty." Shelley is an excellent instance of this "insane temperament."

He was somnambulistic from his sixth year.[11] From "very early childhood" he was an imaginative and restless child. Trifles unnoticed by most children, seem to have made keen and permanent impressions upon him—the sound of wind, the leafy whisper of trees, running waters. The imaginative faculties came so early into play that the unconscious desire to create, resulted in the invention of weird tales of legendary creatures, tales sometimes based on remote fact, in attempted delusion of neighbors and in the experience of more or less positive hallucinations. His memory surprised many of his friends. He delighted in "weird and somber tales of the supernatural and horrible." He was extremely desultory and careless in all his habits. His room was a chaos of scientific instruments, chemicals and books. "From thinking the best of friends and acquaintances he could of a sudden, and with insufficient cause, pass over to the other side and think the worst." Like all neuropathics he was easily hypnotized. He was a great hypochondriac. On one occasion, meeting a woman with large legs he was seized by the notion that she had elephantiasis and had infected him. Medical examination demonstrated the falsity of this notion but it persisted for several days. "One evening he actually arrested the dancing of a line of pretty girls, proceeding to examine their arms and necks with such woebegone gravity that they were terrified and their angry partners silent." He suffered frequently from the topoalgias so frequent in neurasthenics and hypochondriacs. His flagrant violations of social conventionalities were notorious. Many of these, however, had, as Symonds has shown, logical bases from the Shelleyan standpoint of reaction against social tyranny not unnatural to a mind early subjected to the brutal "fagging" of English schoolboys and brutality of schoolmasters who found a "voluptuous ecstasy" in flogging boys ere entering on the "feast of reason, flow of soul" of a banquet whereat the flogger was the "genial, humorous" host. Shelley, however, violated his own code in a most capricious manner. An avowed atheist, he took the sacrament in a blatantly audacious manner for interested reasons. He reverted to fetichism and argued for the existence of ghosts. He denounced legal marriage, but, married Harriet twice; once by the simple Scotch common-law and once by the English church rite. The constant nagging of his intriguant "sister-in-law" which drove Harriet into "nerves" and him into home hatred, led to the estrangement of wife and husband. The hysteric insensibility of the wife to her own children fostered this. Shelley's temperament, however, aided this tendency. He "took strange caprices, unfounded frights, vain apprehensions and panic terrors, and therefore absented himself from formal and sacred engagements." In a month after the English marriage he deserted Harriet and her unborn child, to elope with Mary Godwin. Even Symonds, the most logically psychological of Shelley's analysts, fails to justify this act from Shelleyan principles. In Shelley's case hereditary degeneracy existed. He normally reacted against school tyranny, hence it alone does not account for the defects and peculiarities of his career.

School training, however, may develop very similar states and wreck many a nervous system. Such an acquired predisposition is singularly well illustrated in the lives of Margaret Fuller and George Eliot. Margaret Fuller says:[12]

"My father instructed me himself. At the outset he made one great mistake, more common, it is hoped, in the last generation than the warnings of physiologists will permit it to be in the next. He thought to gain time by bringing forward the intellect as early as possible. Thus I had tasks given me as many and various as the hours would allow, and on subjects beyond my age, with the additional disadvantage of reciting to him in the evening after he returned from his office. As he was subject to many interruptions, I was often kept up until very late, and as he was a very severe teacher, both from his habits of thought and his ambition for me, my feelings were kept on the stretch till the recitations were over. Thus it frequently happened that I was sent to bed several hours too late, with nerves unnaturally stimulated. The consequence was a premature development of the brain that made me an 'infant prodigy,' by day and by night a victim of spectral illusions, nightmare and somnambulism, which at the time prevented the harmonious development of my bodily powers and checked my growth, while later they induced continual headache, weakness and nervous affections of all kinds. As these, again, reacted on the brain, giving undue force to every thought and every feeling, there was finally produced a state of being both too active and too intense, which wasted my constitution and will bring me—even although I have learned to understand and regulate my now morbid temperament—to a premature grave. . . . No one knew why this child, already kept up so late, was still unwilling to retire. My aunts cried, 'Out upon the spoiled child; the most unreasonable child that ever was—if brother could but open his eyes to see it—who was never willing to go to bed.' They did not know that, soon as the light was taken away, she seemed to see colossal faces slowly advancing toward her, the eyes dilating and each feature swelling loathsomely as they came, till at last, when they were about to close upon her, she started up with a shriek which drove them away, but only to return when she lay down again. They did not know that when at last she went to sleep, it was to dream of horses trampling over her, and to awake once more in fright; or (as she had just read in her Virgil) of being among trees that dripped with blood, while she walked, and walked, and could not get out, while the blood became a pool and plashed over her feet, and rose higher and higher till soon she dreamed it would reach her lips. No wonder the child rose and walked in her sleep, moaning, all over the house; till once, when they heard her and came and waked her, and she told what she had dreamed, her father sharply bid her leave off thinking of such nonsense or she would be crazy; never knowing that he himself was the cause of all these horrors of the night."

To these influences Emerson[13] rightly referred her later demonology, with its curious superstition and imperative conceptions. He says:

"Her childhood was full of presentiments. She was then a somnambulist. She was subject to attacks of delirium, and later perceived she had spectral illusion. When she was 12 she had a determination of blood to the head. 'My parents,' she said, 'were much mortified to see the fineness of my com-

[9] Irregularities of the Jaws.
[10] Alienist and Neurologist, 1888.
[11] These particulars are from the Lives by Dowden, Sharp, Symonds and Miss Sanborn.
[12] Memoirs, Vol. i, p. 14.
[13] Memoirs, Vol. ii.

plexion destroyed. My own vanity was severely wounded, but I recovered and made up my mind to be a fright and ugly.' She was all her lifetime the victim of disease and pain. She read and wrote in bed, and believed that she could understand anything better when she was ill. Pain acted like a girdle to give tension to her feelings. A lady who was with her through an attack of nervous headache which made Margaret totally helpless, assured me that 'Margaret was yet in the finest vein of humor, and kept those who were assisting her in a strange, painful excitement between laughing and crying, by perpetual brilliant sallies. There were other peculiarities of habit and power. When she turned her head on one side she alleged she had second sight, like St. Francis. These traits and predispositions made her a willing listener to all the uncertain science of mesmerism and its goblin brood which have been rife of late years' (1849). She had a feeling she ought to have been a man, and said of herself: 'A man's ambition with a woman's heart is an evil lot.' In some verses which she wrote 'To the Moon' occur these lines:

> 'But if I steadfast gaze upon thy face,
> A human secret like my own I trace,
> For through the woman's smile looks the male eye.'

And she found something of true portraiture in a disagreeable novel of Balzac, 'Le Livre Mystique,' in which an equivocal figure exerts alternately a masculine and a feminine influence on the characters of the plot.

The same tendencies are demonstrable in George Eliot. Strongly skeptical and virile in type as was the intellect of George Eliot, her childhood was marked by phenomena of like causation to those already described in Margaret Fuller. Like Margaret Fuller she had a father of "extraordinary determination of character." Her mother was a "woman with an unusual amount of force" but of "ailing habit." George Eliot during childhood "suffered from a low general state of health and great susceptibility to terror at night," and the liability "to have all her soul become a quivering fear" remained during life. She suffered from periodical depression which later gave place to migraine evidently of uric acid type, and often attended with rheumatoid phenomena. She was "an awkward girl, reserved and serious far beyond her years, but observant and addicted to the habit of sitting in corners and watching her elders." Fear of the unknown in children, seemingly a reversion to the fear of the unknown of savages, tends like it to produce occult belief. This has been pointed out by Emerson in the case of Margaret Fuller. Despite the German rationalism of George Eliot, such fear found utterance in her "Beyond the Veil;" a mystically occult contrast with her novels and with the Positivism which was her religion. The philosophy of George Eliot should theoretically have effaced such mysticism, yet, as a survival of "night terrors," it came to the surface.

Dickens teaches a lesson in school training eminently worthy of study when, in discussing the model school in "Hard Times," he says about the teacher:

> "Ah! rather overdone, Mr. Choakumchild! If he had only learned a little less, how infinitely better he might have been taught much more. He went to work in the preparatory lessons not unlike Morgiana in the "Forty Thieves"—looking into all the vessels before him, one after another, to see what they contain. Say, Mr. Choakumchild, when from thy boiling store thou shalt fill each jar brimfull by-and-by, dost thou think that thou wilt always kill outright the robber Fancy lurking within, or sometimes only maim and distort him?"

The career of the modelly trained moral imbecile, "Gradgrind," is an apt illustration of the results of this system. His case is one of the extreme results of school over pressure in which the struggle for marks before maturity more than equals in fierceness and intensity the struggle for good after it. In certain respects this school over pressure checks even in well developed minds the transition from the terror of the unknown of childhood into the calmness of maturity. Many morbid fears, imperative conceptions and acts, which torture the individual during an otherwise healthy career, unquestionably originate in the earlier periods of life.

The treatment of the degenerate offspring of degenerate parents is one of the most serious problems which confront the physician. Although the parents may be convinced of the necessity for extreme caution in the rearing of their children, their inhibitions are too weak to carry out the treatment decided upon. In complete separation is the only hope of ever accomplishing anything by the training of the weak inhibitions of the degenerate and this course is practically impossible. Degenerate mothers are excessively fond of their children after a maudlin fashion, and their egotism causes them to think themselves model mothers. I have had such a mother consent to turn over entirely the training of her child to a person recommended by me, and yet at the first attempt of the companion to exercise authority over the child, the mother told the child to do as it pleased. These children need a nourishing, stimulating diet, an outdoor life, regular hours and regular employment; in fact, they require the very life which is led by the healthy children of healthy parents, but which they rarely get unless one of the parents happens to be of sound mind and strong will and financially circumstanced to control the surroundings of the children.

Dr. W. S. Christopher, in a paper recently read before the Chicago Academy of Medicine,[13] has laid stress on the nutritional influences, active in the production of neuroses underlying psychic states, and these deserve more attention than they have received.

Beside hereditary and the other predisposing causes cited already, Dr. Welt very correctly has said that the etiological factors in the production of mental disturbances in children are injuries of the head, either during parturition or later; acute cerebral trouble and abnormal development of the brain; fright, masturbation and infectious diseases may act as predisposing elements. Among the chief exciting causes are the fevers.

Thore has shown that psychoses following acute diseases are of two classes; the first is met with during the development and the duration of the acute process itself, while the second class is found only during convalescence, or at least during an intermission of the disease. The etiology, as well as the course and the issue in these two groups—the febrile and asthenic deliria—differ considerably.

Kraepelin points out that in pathogeny of the febrile deliria the exciting cause prevails considerably over the predisposition; the causes of the disease are dependent upon somatic disturbances. Hence the monotony of the febrile deliria, the short course, and the nearly always favorable issue with the disappearance of the etiological cause; on the other hand, the predisposition of the individual forms the most important factor in the development of the asthenic form. The lowered state of the system, depressed by the preceding fever and infection, exhibits itself more when the circulation is retarded during the decline of the fever; and the brain which may have suffered in its vitality by the preceding rise of temperature, is the first organ that reacts on the inadequate supply of blood; besides, there may be an influence of the infectious elements upon the central nervous system, either by affecting the ganglionic cells, or indirectly through a change of the blood by the microörganisms. In the deranged equilibrium of the system even slight irritating influences, afforded by the events of daily life and

[13] Medical Standard, Aug. 1893.

frequently overlooked, may cause mental disturbances. In their course the asthenic psychoses resemble the mental derangements of spontaneous origin, and usually terminate in full recovery; with convalescence and better nutrition brain morbidity disappears. Dr. Sarah Welt advises that as a matter of prophylaxis, children after acute diseases, especially when in an anemic and poor condition, ought not to be allowed to leave the bed too early, and the action of the heart should be carefully controlled. Threatening spells of weakness ought to be prevented by administration of good nourishment and stimulants. In occurrence of deliria strict control of the patient becomes necessary; bed rest and a generous administration of alcoholics and heart stimulants. Against the irritable state of the brain, sedatives in result-giving doses should be used.

Dr. Kiernan states that the psychical manifestations of the febrile stage of any disorder are usually an hallucinatory delirium or acute confusional insanity. These may be agreeable in type. With a fall in temperature occur asthenic psychoses, characterized by visual and auditory hallucinations and their consequences. These are due to acute exhaustion of the nerve-centers succeeding to considerable thermic oscillations. The mental symptoms of the febrile stage may aggregate temperature oscillations and in turn be aggravated.

Spitzka[14] finds that febrile and other acute disorders sometimes cause serious and incurable insanity usually combined with more or less arrest of development. This result is most apt to follow when some moral cause, such as a shock is superadded. From 10 to 30 per cent. of infantile insanity is attributable to the acute diseases of childhood, the overwhelming majority being sequelæ of the exanthemata (excluding cases followed by simple imbecility). Scarlatina, measles, typhoid and acute articular rheumatism are most to be dreaded in reference to their immediate mental sequelæ. Typhoid is especially deleterious. Nasse classifies the febrile insanities according to their period of development: *a*, coincident with the fever as to time and ranging from delirium to insanity; *b*, developing as an apparent aphasia and dementia. Spitzka found but 7 per cent. of his cases attributable to these causes. This low percentage was due to the fact that he did not include fatal cases nor ephemeral deliria, which in children, as Hughes and McBride[15] have shown, replace malarial attacks and which are benign, self-limiting and not apt to come under alienistic care, like the more serious and protracted mental complications which may attain pseudo-cretinism. Aside from an infrequent hallucinatory delirium, there is a continuation of the specific somatic disorder, so that a true convalescence can not be said to have existed. This is often associated with hyperthermia; *c*, developing during convalescence. These last, Spitzka[16] is of opinion, are different from the other two, are probably more benign and are anemic or adynamic. Spitzka states that sudden changes of temperature uncomplicated by other causes can produce transitory frenzy and acute delirious states. This is equally true of the extremes of temperature. Over exposure to the sun and exposure of the unprotected head of an infant to a hot stove have been declared responsible for the same acute delirious or furious outbreaks that Reich observed in children who, after long exposure to severe cold, suddenly entered a warm room.

Rapid cure of a maniacal delirium after the expulsion of ascarides in several cases proves, in Spitzka's judgment, that a parasitic etiology has been correctly assigned for these cases. These mental disorders are usually of acute type.

The parasites which have their seat low down in the bowel have a less direct relation to mental disturbance when, as in not a few cases, they provoke masturbation by the scratching of the anus they cause, or by wandering into the genital passages. The forms thus produced vary from the precipitation of hebephrenia to a stuporous insanity, or an acute hallucinatory confusional insanity of favorable prognosis.

As to frequency, Dr. Sarah B. Welt[17] remarks that insanity in the first ten years of life, aside from idiocy is very rare. Out of ten thousand inhabitants, Emminghaus found in Germany, between the first and fifth years, 0.18 per cent. insane; between the sixth and tenth years, 0.69 per cent.; and between the eleventh and fifteenth years, 1.46 per cent. insane. Debouteville, in France, found among the insane admitted to the asylum in Saint-You from 1827 to 1834, 0.9 per cent. between the fifth and ninth years; 3.5 per cent. between the tenth and fourteenth years; and 20 per cent. between the fifteenth and twentieth years. Turnham found but eight children less than ten years of age among 21,333 insane; idiots, who are far more frequent in number, not being included. The most common mental derangement in childhood is idiocy, be it congenital from insufficient development of the brain, or acquired from previous cerebral disease. Next in frequency is maniacal exaltation, while depression occurs only in late childhood. Insanity in childhood in her opinion occurs more frequently than is evident from the statistics. As no psychosis in childhood shows the entire complex of symptoms as in adults, it is readily understood that the symptoms of a mentally deranged child may often be taken to be bad behavior, and only the result, mental weakness, will be recognized.

The neuroses, properly so-called, are beyond the scope of this article. All of them may be accompanied by psychical symptoms. Hysteria, convulsions, ecstasy and chorea may occur in epidemic form especially during religious revivals. The child crusades were mixtures of these epidemics with psychical ones.

Epilepsy and hysteria in childhood as in adult age present their characteristic mental phenomena. Extreme cruelty, as in the case of the boy fiend, Pomeroy, may long be the only manifestations of the epileptic neurosis. In this age it is well to remember that as Griesinger has shown mental derangement often appears as moderate irritability, persistent or habitual. The child is passionately obstinate, quarrelsome, malignant, and even immorally inclined. Often this mental degradation is dubbed simple wickedness. It may occur as a simple, logical perversion with aimless, errabund tendencies, intellectual and emotional perversion with excitement. These children can not keep still a moment. They talk incessantly and incoherently, and are very inattentive. There are sometimes longer or shorter at-

[14] Amer. Jour. of Neur. and Psych., 1883.
[15] Med. Standard, Vol. iv, 1888.
[16] Keating's Cyclopedia.
[17] New York Medical Journal March 18, 1893.

tacks of mania. In children of from 3 to 4 years attacks of crying, of wild refractoriness, of striking and morbid destructiveness occur. These may alternate with epilepsy, chorea, stupor, ecstatic cataleptoid states (simulating katatonia). The child may remain for hours or days as if quite absorbed, with open eyes, fixed countenance and peculiar position, sometimes breaking out suddenly into loud cries. Hypochondriacal states develop in children of parents morbidly anxious about the health of their offspring.

According to Shaw[18], in children the ideas are simple, few and disconnected. They are therefore incoherent because of an absence of organic associations between the residua. The morbid phenomena are not systematized as in the adult, and the result is (according to Maudsley[19]) delirium rather than mania. The morbid idea in the child's mind having little range of action acts downwards (Maudsley) on the sensory ganglia, causing hallucinations or giving rise to morbid impulses. These impulses constitute impulsive insanity, called by Maudsley, monomania, and by Morselli, paranoia rudimentaria impulsiva.

Under the head of monomania Maudsley places the epidemics of morbid ideas which have from time to time in the history of the world affected children. The ruling instinct in a child of 3 or 4 is self-gratification, involved in which is a tendency to destroy what it dislikes. Its insanity is manifested by perverse and unreasonable appropriations of whatever it sees, and by extreme destructiveness. It suffers from the instinctive variety of moral insanity. Maudsley describes a cataleptoid type of insanity resembling katatonia.

The instability of childhood is shown in the presence of garrulity, melancholiac depression or excitement, maniacal exaltation of the pleasant deliria type and instinctive tendencies. Exaltation and delirium is usually contemporaneous with the beginning and acme of febrile attacks, while depression usually follows the disease. The temperature at which delirium begins in a child is, as Clouston has shown, a good index of its brain constitution and temperament. The temperature at which delirium sets in is lower in the sensitive. Such children, independently of temperature, are subject to gusts of unreasonable elevation during which they are quite beside themselves, rushing about wildly, shouting, fighting, not really knowing what they are about; this coming on at intervals like the attacks of disease.

Scherpf[20] finds that mania of sudden inception and furibund character is the most frequent acute type. Melancholia often originates in hallucinations and has a tendency to hypochondriacal phases. Katatonia may occur. Impulsive monomania, paranoia, periodical insanity, and moral insanity are more frequent than the acute psychoses.

In W. A. Hammond's[21] experience the most frequent type of insanity in children is mania, but insanity in children may occur as an affection mainly of the emotions or as characterized by blind and unreasoning impulses to deceit or violence. Fixed delusions are not a prominent feature, but there are perverted feelings, indecency, destructiveness, malignancy toward relatives and hallucinations.

[18] Mental Pathology.
[19] Manual of Insanity.
[20] Jehrb. f. Kinderhl. 1883.
[21] Insanity.

Kiernan[22] agrees substantially with Clouston and Griesinger, but has noticed that hallucinatory types are relatively frequent.

Hecker, Kerlin and Kohler find hereditary types of insanity in children marked by disagreeable variable temper, irritability, lack of self-control, morbid egotism, and often one-sided talent, ideas of persecution at times, with impulsive and immoral tendencies.

Kirchoff[23] finds that children whose ancestors have suffered from psychoses or neuroses, not alone become delirious from slight causes, such as digestive disturbances, slight fever, teething, etc., but are apt to be depressed for a long time after the ordinary disagreeable events of daily life. Mental work at school rapidly exhausts them. Fright and punishment excite them to a dangerous degree.

According to Moreau de Tours, circular and periodical insanity in childhood resembles in all essential particulars the same psychosis in the adult.

Pottier[24] insists that persecutional delusional paranoiac presents special characters in childhood. They are wild, unsociable, inclined to solitude and isolation, somber and taciturn, defiant and suspicious, living apart from their comrades, regarding these last as scoffers, and already interpreting to their disadvantage the most insignificant event. Such a delusional state may of course have the usual forensic results.

Morbid jealousy may present itself at an early age and exercise a decidedly deleterious influence on the heart of the child. Love, according to Descuret, explains the passionate attachment often displayed by little girls for dolls. In the degenerate, romantic love may occur early. Byron at the age of 8 was passionately in love with Mary Duff, a little girl of 10. The news of her marriage eight years later caused convulsive attacks. Alfieri and Dante were similarly in love at 9 years. Such early love must be regarded as morbid and an expression of degeneracy like precocity and early puberty. In the cases reported, other evidences of degeneracy existed. Like all precocity it needs restraint, not assistance. Pathological anger is exceedingly frequent in childhood. Imperative conceptions of all types occur. Hughes[25] has observed pyrophobia in a boy of 6, who doused all fire with water. Agorophobia, mysophobia, clitrophobia, etc. also are relatively frequent.

The discussion of the "imperative acts" following imperative conceptions involves many mixed states closely bordering on delusional conditions, from childhood's instability with regard to the difference between the subjective and the objective.

With the increasing social tendency to expose children to financial and other mental stress at the critical period antecedent to puberty, suicides, insanity and criminality among children must, in the nature of things, increase. In evidence of this, Moreau de Tours gives the following table:

Years	15	14	13	12	11	10	9	8	7	Total
1861–65—63	29	28	11	6	3	0	1	0		141
1866–70—73	46	25	7	9	3	2	0	1		166
1871–75—67	42	22	21	11	5	3	3	1		175
	203	117	75	39	26	11	5	4	2	482

In the last ten years forty-two boys and fifteen girls attempted suicide in Russia. In the fourteen

[22] American Lancet, Vol. VII.
[23] Handbook.
[24] Thèse de Paris, 1886.
[25] Alienist and Neurologist, 1881.

months ending December, 1891, 62 children committed suicide in Berlin, Germany. The youngest had not reached the age of seven. The percentage there is higher for the same reason which will increase it here; the increase of school over pressure. The exciting cause of the suicide is usually a trivial one. One boy killed himself to get rid of "so much dressing and undressing." No less than five attempts at suicide were made during 1887, by children under 14 years of age, resident in a Philadelphia district less than a mile square. In three cases the attempts were successful. In three of the five cases the moral epidemic nature of suicide was shown in the fact that one suicide was an exciting cause of two suicides and one attempt. In all five cases, the approach of puberty had produced its usual emotional disturbance. The immediate causes were, as in most child suicides, trivial. Hanging was the favorite method, although one girl (who seems to have formed the melancholiac delusion that she had hanged one playmate who committed suicide) took laudanum. She recovered from the poisoning and the melancholia. St. Louis has recently had a very similar epidemic. Griesinger states that 6-10 per cent. of the suicides in England are of children under 10 years. Death does not inspire children with the same fear it does the majority of adults, and the weak ego is easily overcome by the dominant idea of suicide.

In dealing with the question of homicide it should be remembered, as Clifford Allbret[26] points out, that in children homicide is, as a rule, an unreflective act. The act is in all probability imitative as a rule. The child has heard of killing and of death but has no clear perception by reflection of their meaning. Homicide by negro children is growing far from rare. In two instances in 1892 two ten-year-old negro boys killed a baby brother to get rid of the trouble of minding it. Moral imbecility may crop out here and in cruelty to animals. Moreau de Tours[27] cites a case in which a four-year-old boy chopped at the face of a ten-months-old nursling. Esquirol has observed a prematurely nubile girl of 8 years who had a fixed tendency to kill her stepmother. Legrand du Saulle reports the case of a five-year-old boy addicted to masturbation from his third year who had long been noticed by his nurse to be wicked and vicious, who loved to torment younger children. He liked to see chickens killed; ordinarily stupid, his intelligence was shown only in mischief. Having noticed nosebleed follow the fall of his baby brother he felt an intense desire to see blood flow. Profiting by the absence of the nurse he flung the baby down from a table. Epistaxis resulted and he rubbed his hands gleefully in blood. With complete indifference he answered in reply to all questions that the nosebleed amused him and he would repeat the deed. This was also excellently illustrated in one of my cases:

The eight-year-old daughter of a hystero-epileptic presented many of the symptoms of degeneracy. Intensely cruel, she took delight in torturing those of a weaker nature than herself. She was constantly calling the attention of a melancholiac to the screen in her window. She knew how to induce the hysterical attacks of her mother and delighted in seeing the attacks although afraid of her mother at that time. She delighted in the sight of blood. She was a somnambulist. Imperative conceptions had been demonstrably present for more than a year. Like so many of these degenerates she had an intense appetite for meat.

[26] Tuke's Psychological Dictionary.
[27] Homicide par les enfants.

The crimes of Pomeroy, the "boy fiend" of Massachusetts who killed and tortured several small children, were later explained by the appearance of epilepsy, and other cases of children homicides have had like explanations. The impulsive type can, of course, occur without epilepsy since the feeble "ego" of the child is as easily overcome by the homicidal as by the suicidal impulse.

Arson results as (Legrand du Saulle remarks) in maniacal, emotional and depressional states, in dements, imbeciles and idiots. It may also develop in girls ere puberty or as Marc has said, in child servants badly treated by masters and desirous of re-entering under the parental roof. Nostalgia results. Fire and flames are found to relieve this, whence arson. Rape may occur from early precocity in both sexes in the degenerate. Thefts often occurs from the same feebleness of the ego which results in homicide and suicide.

Dr. KIERNAN—There has been too great a tendency in latter days to put heterogeneous psychoses into the Procrustean bed of insanity. It not infrequently happens that acute insanity is paranoiacal even when senile. Such cases are frequently curable. It very often happens that an old gentleman is locked up and regarded as incurable when some treatment would improve his mental condition. With regard to the point raised about paretic dementia after sixty years of age, it is well known that there is an enormous number of such cases on record. There has been a tendency to call that senile or latent paretic dementia. I remember two cases in the same family which elucidates the point that paretic dementia in one generation may occur late and in the next one early. In the cases I mention the father had it at 65 years of age and the son at 25. The various types need more than an ordinary line of demarkation and for that reason I am glad to see the subject brought up.

With regard to the second paper, of course in a general way many of these mental phenomena in children pass unnoticed. There is a great tendency to ignore mental symptoms of ordinary disease and under ordinary circumstances. It shows a tendency in a right direction when we begin to study mental disorders resulting from various diseases.

Dr. FRANK T. NORBURY—I was quite pleased to hear the presentation of the subject of mental affection in children. I was associated for a time with a feeble minded institution, and having cases coming into the institution from three years up to about twenty, probably the oldest children being about twenty. I had some very interesting cases under observation. While most of them were cases of marked idiocy, yet there were many of them practically of recurrent insanity. The doctor speaks of Dr. Kerlin's observations. It was in the institution of which he was the superintendent that I served a term and where I met three cases of special interest; all these cases were females and did not come under my special charge. The cases of paranoia in childhood, that is those which I would class as paranoia, are probably not frequent, but yet there were at that institution several, one of which had very thoroughly systematized delusions of persecution, and another one had some hallucinations at intervals accompanying these delusions. I have had quite a number of children presenting epileptic insanity, and we received them in the Illinois institution. I had one child 7 years of age committed as insane to the Illinois Central Hospital for the Insane, a boy who presented the symptoms of epileptic insanity quite similar to those of an adult. We had several cases in one winter, but we have not at present any under 15 years of age.

Dr. ALEXANDER—I do not know whether women doctors have a greater tendency to look into the domestic affairs of their patients, but I want to state a case that I met with recently. I had a case of senile insanity on hand and had been warning the members of the family in which there were four married daughters who all had children, the family history being bad, about the care of the children. An expert was called into the case and when the daughters questioned him, for I suppose I had aroused their fears, he said: "Oh, no, there is no danger; you need not take extreme care of your children. It is only the strong-minded who get insane anyway." I have lost my hold on that family. I feel that it is a necessity in such cases for the physician when he comes into a family and finds this difficulty to warn the family about the care of the children. Yet it is done almost never, where the family really should be warned about the care of their children. The children are allowed on the street late at night, allowed tea and coffee that even healthy children should not have, and yet they have never been warned.

SOME REMARKS ON INSANITY OF THE AGED.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-fourth Annual Meeting of the American Medical Association.

BY FRANK PARSONS NORBURY, M.D.

JACKSONVILLE, ILL.

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The tenure of normal mentality in old age, depends on the sum total of vitality originally deposited and the maintenance of normal equipoise in the brain machinery during the years of active engagements in the affairs of life.

The blending of the normal and abnormal mental states renders the psychological study of old age difficult, because what is the normal tenure of one approaches the abnormal change in another; the result is, as Clouston has remarked, "the psychology of old age has yet to be written." To the confusion arising from the differentiation of ordinary functional derangements from organic brain diseases, is due the difficulty of diagnosis and clinical classification, which must be experienced to be appreciated.

In a clinical study of 196 cases of insanity, occurring in men over sixty years of age, coming under my care, I have been struck by the heterogeneous symptoms, yet similarity of mental affections, when modified by the influence of senility. Senility seems to be more or less a common mold in which the mental disorders of the aged are cast, for the mark of the senile change is on them all. It is because of the modifying influence of senility, causing variability in the tenure of normal mentality and confusion in abnormal manifestations of intelligence, that there is such a wide difference in the classification of the insanities of the aged. In looking over the reports from some thirty prominent State institutions for the insane, I find it is, more or less, the rule to classify distinctive insanities of the aged as senile dementia. While it is true senile dementia is the only characteristic alienation of the mind which in its uncomplicated form conforms more to a distinctive type than any other one form of insanity at any age, yet we must not forget that we have other types in the aged as much entitled to consideration, both pathologically and symptomatically, as senile dementia. Indeed, all things considered, it seems to me that chronic cerebral atrophy, so often classed as senile dementia, is the most prominent type of senile insanity encountered in institution practice. It is deserving of consideration because it is seldom, if ever, given in hospital reports as a form of senile insanity, having a distinct pathology and recognized symptoms. Its pathological difference from senile dementia lies in the nerve cells undergoing, primarily, a *parenchymatous* degeneration, while in the senile dementia there is to be found *infiltration* of the peculiar spider cells of which Lewis has spoken. It is worthy of mention just here, that to Lewis we owe much of the advance made in the pathology of insanity. He says, regarding senile dementia and chronic cerebral atrophy, "that we are dealing with two obviously distinct affections of the nervous system.

"In senile form we find the results of a general decline in the vital activities, the functions of nutrition, circulation and the respiratory activities diminished. The blood is impaired in quality, diminished in quantity, and sluggish in its flow; and when we turn to the verdict of morbid anatomy the blood vessels exhibit diseased tunics, narrowing of their lumen tortuosity with attendant impairment of their resilience accompanying atheroma,—the tissue-elements universally, and the brain cells in particular, presenting fatty changes in their constituents, all indications of a senile retrogressive process.

"Chronic cerebral atrophy presents a notable vascular change, but of a very different nature—a compensatory hypertrophy of the muscular tunic of the small vessels, especially emphasized in the cerebral arterioles, and very frequently associated with advanced atheroma of the large basal blood vessels. This hypertrophic condition is found in varying degrees in the kidneys; imperfect renal function being manifested in nearly all of these instances of chronic brain atrophy."

Other distinctive points in pathology are mentioned by Lewis, the pulse being especially important. "The senile pulse presents a tortuous artery, unduly prominent and visibly mobile with each pulsation, giving a sphygmogram of exceedingly low tension, a vertical percussion up-stroke, an almost equally sudden collapse and a frequent diminution of the dicrotic wave varying with the endocardial and aortic conditions." In the pulse of the subject "of chronic cerebral atrophy the hardness is so marked that we have often to employ a pressure of 180 grams and with a large hypertrophied heart the pressure often has to be still further increased."

Lewis regards alcohol as a determinal factor in the production of chronic brain atrophy.

We know that chronic cerebral atrophy does not, necessarily, exist in what is ordinarily termed the senile period, for it has been observed before the age of thirty; however, it is most frequently found beyond the age of fifty.

The mental symptoms are those of despondency with suicidal tendencies, (a recent admission committed suicide within twenty-four hours after coming to the hospital); maniacal outbreaks are not uncommon; inhibited intellection especially amnesia, is marked; transient monoplegia is frequently noticed. Vertigo is distressing in some cases and has led to confusion with Meniere's disease. These symptoms are not unlike those encountered in paretic

dementia or cerebral syphilis, but are distinguished from them by other associated symptoms, especially of cardiac and renal origin. Vertigo is quite noticeable as before mentioned and is probably due as Hirt says, "to the atheromatous condition of the arterial walls, and the consequent irregularities of the blood supply to the brain substance."

The melancholia of chronic atrophy is, we believe, dependent alone on those circulatory changes. All have noticed in attacks of acute melancholia of the aged, where cardiac disease was conspicuous, the dependence of mentality upon the stability and regularity of the heart's action. In a study of probably thirty such cases, during the past four years, I have satisfied myself that more than renal disease is necessary for the melancholia of cerebral atrophy, and that the circulatory changes are, primarily, the cause of such mental depression. Again, the maniacal outbreaks of chronic cerebral atrophy with their explosiveness, incoherence and destructiveness may be of cardiac origin. I have noticed, especially in cases complicated with angina pectoris, that the mania was very severe and distressing. The fear of impending death, to be noticed in individuals not insane is, in the insane, transposed into hallucinations and delusions, destined to cause great mental disturbance.

In the ordinary senile dementia we meet with destructiveness, filthiness and incoherence; the physical and mental helplessness being but the result of the progress of disease.

The decline is gradual; the slowness of the atrophic process producing mental symptoms is, at first, regarded as but the natural result of old age; the amnesia, the sudden changes in moods and emotions, and the appearance of delusions being the evolution of distinct senile dementia.

The minor details are familiar to you all, and cause you more or less anxiety in their treatment, especially at their homes. It is the persistent wakefulness at night of such cases and their tendency to wander away from home, that ultimately leads their friends to have them committed to the hospital. Here the career of helplessness goes on until death sooner or later closes the scene. In brief, I have presented the characteristics of these two *distinct* mental diseases, having *distinct* symptoms worthy of more study from alienists, especially in their pathological differentiation, which is too much ignored.

Another organic disease of the brain, however not frequent, but still it does occur after sixty years of age, is paretic dementia. Steadman says that it rarely occurs after fifty, but I have, in the 196 cases of insanity occurring in men over sixty, found seven marked cases. Mickle has observed that "owing to the brain strain and exhaustion of the over pressure and blood deprivation in modern life, general paralysis tends to occur at an earlier age than formerly." I may therefore look upon this series of cases as of rare occurrence. I rather believe in the agricultural communities, from which most of my patients came, the longevity of such people may be considered as a factor in the cases I have observed. Nothing out of the ordinary was noticed in the cases, except in the postmortem examination of one, the very thin skull was interesting, for it is usual, as Wood says, to find hyperostosis and exostosis on the skull. This skull was so thin that objects could readily be distinguished through it.

Syphilitic disease of the brain was observed in five cases; one made a good recovery, three died and one is still under observation. The diagnosis of intracranial syphilis in the aged is difficult, but the symptoms, as outlined by Gray, have materially assisted me in making what I believe to be a correct diagnosis in the five cases above mentioned, the mental symptoms of course confirming my belief. The suspicions and hallucinations being especially marked.

General paralysis may occur beyond sixty years of age.

Syphilitic insanity should not be confused with senile dementia, and the treatment of syphilitic insanity must be vigorously pushed in the aged to avoid chronicity.

In conclusion, gentlemen, I would say that the differentiation of the insanities of the aged are too carelessly observed in our State hospitals for the insane; that the attention to their pathology is neglected and the observation of special symptoms ignored. The recoverable attacks of mania and melancholia being too often classed as chronic insanity, and the recurrent attacks of mania and melancholia in chronic cerebral atrophy classed as acute insanity.

We need more attention to the study of the science mind, and less politics in our institutions to bring them up to the standard of foreign hospitals.

REFERENCES:—"Mental Diseases," W. Bevan Lewis, 1891; "General Paralysis," Wm. Mickle—Tuke's Dictionary, 1892; "General Paralysis," H. R. Steadman—Reference Handbook. Wm. Wood & Co. 1886.

SOME MEDICO-LEGAL EXPERIENCES IN RAILWAY CASES.

Read before the Section of Neurology and Medical Jurisprudence, at the Forty fourth Annual Meeting of the American Medical Association.

BY THOMAS G. MORTON, M.D.
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Railroad injuries, from a surgical point of view, possess many features of interest; not the least of which is the medico-legal question concerning the gravity or reality of alleged injuries for which pecuniary compensation is demanded.

At a time when he least expects it, in these days of rapid transit and frequent travel, any individual may be obliged to witness, participate in or be the victim of a railroad accident attended by loss of life or by various degrees of traumatism—maiming, contusion or concussion, and every surgeon is liable to be called upon to render assistance to those injured or claiming to have been injured by such an occurrence. Experience, however, has taught us to exercise special caution and to express a very guarded opinion as to the prognosis or gravity of a traumatism occurring under such circumstances. Suits for damages are so common that the surgeon or physician almost instinctively recognizes these patients and governs himself in accordance with this fact, knowing that the attempt may be made to use him as a means of extorting large sums of money; indeed, he may even unconsciously become an innocent party to a conspiracy to defraud the railroad company defendant.

Under such circumstances it would seem proper that we should consider this question, which, although largely medico-legal, is still more one of diagnosis

calling for a high degree of skill to separate the genuine from the fraudulent claimants. I have prepared a brief resumé of several recent cases which illustrate the tendency above referred to; but wish first to present briefly a few of the more prominent characters which distinguish this class of cases from ordinary surgical injuries. The most evident feature in these patients is a psychological one, arising from the prospect of receiving damages from a railway corporation by simple and easy means.

The fact that courts and juries are popularly believed to sympathize with the plaintiff in these trials, and the corporation defendant is popularly presumed to be guilty until proved to be innocent, has an undoubted effect in stimulating such litigation.

The number of persons in the United States annually claiming to have been more or less seriously injured upon railways is very great; many of these cases are beyond all doubt fictitious and fraudulent. Upon good authority it has been stated that English railways have paid, within a period of five years, upwards of eleven millions of dollars damages for spinal injuries alone. I believe that I am correct in stating that more or less exaggeration is present in nearly every case of railway injury. In the attempt to impress the court and excite the sympathy of the jury, very frequently the person claiming to be injured will go close to the border of imposition, even when he justly claims compensation for actual injuries. On the other hand, the willingness of railroad companies to settle such cases outside of court and to make prompt compensation for actual injuries, pain or loss of time, is so well known that designing persons attempt to take advantage of it, and cases of fraud and even actual conspiracy to defraud are not infrequent.

Prompt settlement for injuries can generally be made on more favorable and satisfactory terms immediately after the injury has been sustained, and in this way a molehill can often be prevented from growing into a mountain; because so long as the claim is unsettled, ill-health continues. In court, the possibility of permanent disability is always made a prominent feature, and every occurrence in the subsequent medical history of the claimant is apt to be traced back to the accident, as an effect to its cause.

Medical expert testimony is commonly conflicting, and the court and jury share the confusion and are embarrassed in arriving at a just verdict. Among the disturbing elements may be mentioned the fertility of the plaintiff's counsel in suggesting the dreadful possibilities of the future and his skill in painting them in lurid colors. Thus the surgical witness is often questioned concerning the possibility of cancer resulting from a contusion, or of displacement of the uterus, the development of tumors or of pelvic inflammation; all of these being the effect, perhaps, of a trivial injury whose external signs are transitory and insignificant.

Lateral spinal curvature has even been claimed to be caused in this way, which has been subsequently found to be due to congenital asymmetry of the lower limbs, as will be observed in two of the illustrative cases appended to this paper. Indeed, it would seem, in the opinions of some, that any of the ills which flesh is heir to may arise from railway injuries. The readily recognized maladies and deformities resulting from railway injuries are settled with less difficulty than cases of hysteria or neurasthenia. In these cases the symptoms, which are often purely subjective, commonly appear soon after the accident, and there is seldom any improvement while litigation continues; the injured person claims to have been in good health until the shock incident to the accident, and subsequently he is so impaired in health as to be able to attend to but little if any work of any kind. Continued nervous shock, insomnia, impaired vision and hearing, disordered alimentary and generative functions, hyperesthesia or anesthesia, general or spinal pain are prominent among the symptoms, which are indeed legion. It is not questioned that such traumatic neuroses may result from a railway shock, and without objective signs of injury; yet the increasing frequency of these cases without collateral evidence and the usual subsequent histories, naturally present the possibility of exaggeration, if not absolute fraud. At the same time such cases, whether real or assumed, are very serious ones for the railway companies because of the difficulty experienced in obtaining the exact condition of the injured person, and also from the gloomy view frequently taken by the medical expert for the plaintiff, who, when pressed for an opinion as to the probability of ultimate recovery, considers complete restoration may be a matter of months or years, or the symptoms may be permanent. Generally nothing further is heard of these cases by the medical man after damages have been adjusted or a verdict rendered.

Much stress has been placed upon those injuries so-called "railway concussion," or "railway spine," which may present no symptom immediately after the accident; but which later on develop the gravest conditions ending either in paralysis or death.

It is popularly supposed that "concussion of the spine" received in a railway collision differs from the same injury received in other ways. My colleague, Dr. Hunt, of the Pennsylvania Hospital, in which institution we have been associated for nearly thirty years, has justly said that it is absurd to give a peculiar pathological character to so-called "railway spine." That the injury occurs there is no doubt; that the medulla is seriously affected in the vast majority of cases there is very great doubt; yet the effort is constantly made to impress a jury that certain peculiar pathological results follow railway injuries and which can only be caused by such accidents.

Other structures of the spine besides the medulla are much more subjected to injury than it is, and their consequences often mislead both patient and doctor, especially the former. The ligaments and muscles are exposed to contusions, strains, ruptures and twists which are wrongfully attributed to concussion.

From these injuries, and from so-called concussions, the patient recovers rapidly or slowly according to their extent. If damages are looked for from a corporation, he is in a state of what may be called "expectant pecuniosity" and shows no amendment until the question is settled. Otherwise, he gets well, as those do who are injured but have no such expectations. There is a striking want of confirmation by postmortem examination of the terrible effects which are said to follow concussion of the spine. In fact, the records of such examinations are so few, notwithstanding the immense number of

those who have claimed to have the injury, that the skeptics are somewhat justified in attributing the few cases which have shown great pathological changes in the cord and in its membranes to the coincidence of disease, as myelitis or syphilis, or to much graver injuries than concussion.

I may say, after looking back upon a very large number of cases of railway injuries, real, exaggerated or feigned, upon which I have been called to give an opinion that I am not conscious that any injustice has been done in a single case. On the contrary, where the claimant was judged to be a malingerer, or that fraud was attempted, the subsequent history of the case has been such as to strengthen and confirm the opinion, and on several occasions, the attempt at fraud has been confessed or the conspiracy revealed.

At the present day the simulation of disease can rarely be successfully carried on, provided the medical attendant makes use of modern means of diagnosis and is familiar with the symptomatology of the feigned disease. Instruments of precision enable us to attain accuracy of observation, which very promptly enables us to recognize such cases, so that fraud is detected with more certainty and its character made manifest to court and jury. Impostors, therefore, are less likely to enter suit when they know that it will be contested by the railroad company and the actual state of the case brought out in testimony.

In many cases, settlements are declined and consequently a defense must be made by the railway corporations, or the treasuries might at once be opened unrestrictedly to all applicants; in view of the possibility of a settlement being refused, it is important for the railways to secure, not only an examination of the injured person soon after the accident, but also an examination before the trial; such evidence may reduce a verdict, or even obtain one for the defendant. Juries, however, usually sympathize with the plaintiff and can hardly be said to carefully weigh the evidence when their sympathies are aroused by the plea of mental and physical sufferring or by the sight of bodily injury or deformity which is always made as prominent as possible. A common method, it is said, of arriving at the proper amount of damages, is for each juryman to name his idea of the proper sum to be awarded, and these sums to be added together and divided by twelve to get the result. In some instances it would seem that the last step (of dividing by twelve) had been omitted.

Occasionally the gallantry of a jury is not appealed to in vain: in a recent case, a husband was killed upon a track where it was shown he had no right to be. Although it was agreed that the widow had no legal claim, a sentimental appeal was made simply for the widow to the jury, who gave her a verdict of $1,200. The foreman of the jury was subsequently asked how it was that such a small sum was given, when, if the widow had any claim at all, the verdict should have been at least $5,000. He replied that it was concluded that the widow could get along at least two years on $600 a year, and then, as she was good looking it was probable that she would be married, and have some one to look after her.

Finally, it is a curious commentary upon human nature, or honesty, but it also affords an additional argument for prompt settlement—it is commonly noticed that no matter how long the plaintiff has been a helpless invalid while the claim was pending, as soon as the settlement is made and the money paid over, he improves in health to a marked and sometimes miraculous degree.

Out of the many cases I have selected the following, which are sufficient to illustrate the points which I wish especially to submit for discussion and which may be taken as representative of the entire class.

In the suit brought by the driver of the coach in which said Smith was injured, he got a verdict of $6,000. We got a new trial and paid $4,000 in settlement. He claimed injury to spine. I afterwards saw him running across Independence Square as swiftly as a deer and as straight as an Indian.

Several of the cases (4, 5 and 7) reported occurred in the service of the Pennsylvania Railroad Company, and in these the examinations were made conjointly and the opinions formulated with my associate, Prof. William S. Forbes of Philadelphia:

Case 1.—Conspiracy to recover damages from the Philadelphia Traction Railway Company for injuries self-inflicted.

Henry S., a young man, was standing on the platform of a Philadelphia traction car and was thrown off while rounding a curve at 5:30 in the afternoon of May 16, 1890. The lad was picked up, found to be considerably injured, and was taken to the Jefferson College Hospital, where it was found that he had sustained a fracture of the left humerus.

The reports of the conductor and passengers showed that the lad was told to take a proper position, and to be on his guard at the rounding of the curve; and that there was nothing to cause him to be thrown off, as the car was about stopping. This led to suspicion and an investigation, and the following was discovered:

Harris P. and Passa P., his son, aged 16 years, and Henry S., his son-in-law, met and adopted a plan to swindle the railway corporation and concluded that one must be injured by an accident due to jerking of the car. After some argument the lot fell to the son-in-law, Henry S., to fall off the car on the date mentioned. Henry S. got on the car, stood on the back platform, and as it rounded the curve (the place agreed upon) he placed his back towards the sidewalk and deliberately stepping backwards, rolled off. It was also discovered that the plaintiff had secured witnesses to observe the accident; the jealousy and cupidity of these persons divulged these facts on account of the large sum of money the plaintiff expected to receive.

It was also found that Passa P., the son of the originator of the conspiracy, was present at the scene of the accident, awaiting its occurrence, and reached the hospital before the injured man arrived. This led to the arrest, trial, conviction and imprisonment of the three conspirators.

It was subsequently learned that Harris P., the father, had been convicted of similar crimes in Russia, and that the three had swindled other corporations in Philadelphia.

Case 2.—Conspiracy to defraud the Traction Railway Company.

The[1] trial of the action in this case was brought by Nicola Flore against the Philadelphia Traction Railway Company to recover damages for personal injuries received, which injuries, it was alleged, were of a permanent character; a lateral curvature of the spine having resulted, and necessitated the wearing of a plaster jacket by Flore.

The defense was that the claim was fraudulent and a conspiracy to defraud the company.

Dr. Wm. Pepper, Dr. Thomas G. Morton and Dr. Horatio C. Wood were called by the defence, and taking Flore from the court-room into an ante-room, they made a physical examination of his condition, first cutting from him the plaster jacket which he wore. At the end of the examination they came back into the court-room and testified that they found a congenital shortening of one leg, a scar from a wound on the back near the left shoulder, and that with these exceptions there was nothing the matter with the man at all.

They further testified that while making the examination they subjected him to certain tests, as to the location of pain, etc., and found from his answers that he was feigning. As to the plaster cast jacket, they said that, while in some

[1] Philadelphia Ledger, November 23, 1892.

instances such an appliance might be of use, there was in this case not the slightest particle of necessity for the man's wearing it.

On behalf of Flore, a counter-conspiracy on the part of the Traction Company was alleged. The counsel for the plaintiff in arguing the case for Flore to the jury, urged them to give his client $10,000 damages; while the counsel for the defendant, on behalf of the Traction Company, suggusted that the jury should give Flore $50,000, the amount of damages originally laid, or, believing him to be a fraud, should give him nothing.

The court, after defining the law, said: "It is charged here that this case has been manufactured; that the injury has been greatly exaggerated; that the plaintiff, with the assistance of others, has attempted to deceive you and to pretend that that which was really but a trifling hurt, was in reality a permanent injury, affecting him for life. If you believe that, of course your verdict ought to be for the defendant, because a man who will grossly and deliberately violate his oath and swear falsely to you intentionally, ought to be disbelieved entirely, and he is getting off very well if he goes out of court with the verdict against him. It is a case for your common sense; apply it to it."

The jury, after a deliberation of about ten minutes, rendered a verdict for the Traction Company.

Case 3.—Trifling or simulated injury greatly exaggerated. Erichsen's railway spine claimed to have resulted.

Arbitration unanimously awarded a verdict for the defendant; appeal and trial before jury, who with exactly the same evidence gave a verdict for the plaintiff; an appeal to the Supreme Court and a new trial; amicable settlement effected.

Mr. A., a resident of Pennsylvania, stated that about 10 A.M., in May, 1891, while seated in a car looking out of a window, when his body was partly turned, a sudden coupling of the cars jerked him backwards, twisting or spraining his spine. He immediately rose in his place and exclaimed, "My God, my back!" At this time he said that he had a pain, as though something pierced him, in the small of the back, that his speech stopped to a certain extent, and became very jerky. He continued his journey when the cars started in a couple of minutes or less, and on arriving at his home at noon he changed his clothing, ate his dinner, and in the afternoon went to work as usual. While at work planing, his back hurt him so much that he had to quit work several times. He worked several days before going to a physician, and on doing so received a strengthening plaster which he applied to his back, and continued to work, off and on, until February or March of the next year. In October previous, he had applied at a general hospital for rheumatic pains.

Finally a claim against the railroad was brought for a large amount of money for permanent injuries. Mr. A. testified at the trial that he had suffered pain from the moment of the accident; that he had not the proper strength in his arms; that sleep was interrupted; there were tender spots on his back, etc. The medical testimony offered by Mr. A. showed that his walk was impaired; he had terrible pains in his head; he was nervous and irritable; he had a swelling over the small of the back on one side; the spine was rigid as though it were a piece of solid steel; there were terribly contracted muscles; a peculiarity of speech; a jerking of his voice when attempting to speak; that when he attempts to lift his arms above a right angle with his body, he can not speak at all; that for many weeks he did not recognize any one; that he had been insane; unable to lie in bed, only on the floor; had lost control of bowels and bladder, etc. In answer to a question, his medical attendant stated that he was suffering not only from hysteria, but from Erichsen's disease, or railway spine, and that he had been seriously and permanently injured by the sudden twisting of his back.

An examination of the plaintiff, with Dr. Charles K. Mills, discovered that, although a neurotic, yet he was unquestionably a malingerer of the most pronounced type. He had previously been treated for lumbago, and he had lost much time from his trade as jobbing carpenter on this account. There was no evidence of spinal lesion, or that so-called concussion of the spine had occurred. There were some symptoms which might charitably be assigned to hysteria; but his jerky speech was purely simulation, and he attempted to deceive while testing his hearing. He was of neurotic ancestry, and some of his relatives had been insane. His general standing in his community was not high. The settlement of the case was left by agreement to arbitrators who, after a very protracted inquiry, taking every particle of evidence obtainable, gave a verdict for the railroad company. An appeal was taken from that result and the case was tried in court, and the jury, with exactly the same evidence, gave a verdict for $19,800. The company appealed and was granted a new trial, before which time came round, however, a settlement was made in full for $4,500.

Case 4.—Successful suit for personal injuries of alleged permanent character; plaintiff's wife subsequently confessed to a conspiracy, and the entire case a fraud.

W. H. was a passenger in a car which was thrown off the track and partly turned over by the spreading of a rail; immediately after the accident he was able to walk about, was at no time confined to his bed, and on the second day afterwards, he drove in a buggy some ten miles to see a physician. Suit was afterwards brought for his injuries, and five months after the accident, an examination being allowed, the following report was made:

W. H. stated that he had, at the time of the accident, received a wound of the thumb and also an incised wound of the ear; he also stated that a part of the seat of the car was pressed in upon his right groin. His physician, who was present at our examination, stated that there had been a partial fracture of one rib; also that the patient had suffered from hemorrhages from the lungs, with some purulent discharge at such times; that there was incontinence of urine, which necessitated the frequent use of the catheter; that the testicles had been injured; that there was abdominal dropsy, as well as general dropsy of the extremities; and that he was suffering from injuries which not only had seriously compromised life, but that he was also permanently injured.

Upon examination, H. was found to be 46 years of age, a very large man, well developed, weighed perhaps 225 pounds; he was sitting downstairs when we arrived, readily got up out of his chair, and walked without assistance or effort to the second story for our examination.

The incised wound of the ear and the thumb had healed with a slight scar; the joint of the thumb had evidently been opened, for complete ankylosis had resulted. There was no other evidence of injury about him, and on our asking his physician to point out the site of the partial fracture of the rib he was unable to locate the injury, and when he indicated as about the place, the latter was not where any rib existed; in other words, it was to the sternum our attention was called.

There was no effusion into the abdominal cavity, nor was there any swelling or dropsical condition of the limbs. There was no evidence of any lung or heart trouble. In regard to the incontinence of urine, the only appearance which would sustain this was the presence of a wet spot upon the patient's shirt, but the usual indications found in incontinence were absent; in other words, there was no urinous odor about the parts, no soaked appearance of the penis and scrotum, no irritation about these parts incident to the constant presence of urine—the mouth of the urethra was normally dry. With forced inspiration and expiration the testicles were elevated and depressed normally; they were of normal size and properly located, nor was there any evidence of their ever having been injured; no adhesions such as would be present had there been any local inflammation as a result of injury; the scrotum was normal. The patient was apparently very sensitive to the least examination of the testicles, and complained of intense pain with the slightest examination by finger pressure. When the chest and abdomen were examined by percussion (which presented no variations from the normal state) the results showed no evidence of variation from health.

Conclusions: The statement that the patient has from time to time more or less severe hemorrhages from the lungs and stomach is not borne out by examination, for it would be impossible for him to have such a condition without more or less disease which could be ascertained. If he has any such loss of blood, it certainly is from the post nasal region and quite innocent in character, and the appearance of the discharge he is said to have would favor this view, because it is clotted, and the associated discharge said to occur is probably nasal and throat mucous. In other words, there is no evidence of any pulmonary or cardiac disease, which must be present to warrant any other view.

There may have been some bruising of the groin; but, if such an injury did take place there is no evidence of it at this time. The internal abdominal organs are normal, and the fact that the patient and his physician have been in error as regards the dropsy of the abdominal cavity and

the limbs shows conclusively that a great mistake in diagnosis has been made.

There are no symptoms present which indicate any permanent injury of any organ or part—in time he will unquestionably be restored to his usual health, except the ankylosis of the thumb, and some trivial scars; and further the examination warrants the belief that the case is an unmitigated fraud.

The jury rendered a verdict for $16,000, and the court promptly decided to grant a new trial, or a reduction of the verdict to $10,000; the latter was accepted, and paid by the company.

A year or so subsequent to the settlement, the wife of the plaintiff voluntarily came to her husband's counsel, who communicated her statement to the counsel for the Pennsylvania railroad company, that her husband received only trifling injuries in the accident; that he worked for a week afterwards at his usual vocation—a butcher, peddling through the streets—and that he then conceived the idea of making a claim against the company; that he had none of the troubles which he swore to having on the trial, and that he did not dare to call her as a witness because she would have sworn that his testimony was untrue. She further stated that he was not impotent, having had sexual relations with her four times during the week the trial was going on, and was also discovered with the housemaid; that he had entire control of bladder and rectum; that the blood he said was expectorated, was brought to him from the butcher; that soon after receiving the payment from the company, he went to Scotland and had not been seen since.

Case 5.—Lateral spinal curvature claimed to have resulted from injury; but was demonstrated to be due to asymmetry of the lower limbs.

Mrs. L., aged 36, claimed that while sitting reading in a car she received a sudden jar induced by the coupling of a car to the rear of the train, by which she was thrown forward, striking her forehead against the frame of the window. No other passenger was injured. When she was examined by a surgeon soon after, no evidence of injury was seen except a slight wound on the forehead. After reaching her home, some hundred miles further on, she was attended by her family physician, who stated that he found her suffering with sick stomach and severe pain extending down the spine to the sacrum. These symptoms continued; the spinal pain subsequently became paroxysmal, and later on a lateral curvature was discovered; the patient, however, was up and about, and gained in flesh. She claimed that either walking or working aggravated the spinal pain; but she considered herself, on account of the spinal curvature, a confirmed invalid.

An examination was made in 1889 for the railroad company by the late Prof. Henry H. Smith, who reported that: "The patient was found in bed, where she says she has remained since the accident; objective symptoms—a slight scar is apparent on the forehead; limbs are full and round, and her weight probably 170 pounds; pulse variable, showing nervous excitement; skin has a healthy color; temperature and reflexes normal; no nerve lesion. Lateral curvature of long standing, possibly has been unknown to patient, physician or friends, but has no connection with the accident;" and the opinion was given that the case was one of hysteria with some neurasthenia.

Subsequently the claim for damages of $20,000 was supported by affidavits from various parties, among whom were female friends who testified that they had seen her dressed and undressed prior to the accident and that they had never noticed any spinal curvature and that after the accident she walked one-sided, and badly. One affidavit from her pastor stated that she was "a woman of fine character and a member of his church in good standing, and the mother of five small children." A medical man testified in regard to the plaintiff "that he had never heard or seen any spinal trouble, any curvature of the spine; her walk and carriage was always straight, erect, and without trouble, nor did she have any curvature of the spine until the railroad accident."

Some months after this, Dr. Smith sent in another report with his reasons in opposition to the claim that the lateral spinal curvature was the result of the accident, which condition was the principal injury for which damages were claimed. This report acknowledged that a lateral curvature existed but that it certainly developed early in life; that there was no instance on record of such a curvature having developed in a few weeks by an mechanical violence, whether applied through collision of cars or other force; and the creation of lateral curvature by a sudden force applied to a fully ossified vertebral column is a physical impossibility; numerous surgical authorities were quoted in support of this view. But the presence of the curvature was not satisfactorily accounted for, and suit was pressed.

Dr. Smith died in March, 1890. As the trial was imminent, another examination was requested and allowed. The patient was found to be in a fair condition of health; but the main source of complaint was the curvature of the spine, which it was alleged caused pressure upon the spinal nerves and a general weakness of the extremities, and generally of all the functions.

Mrs. L. was after much persuasion induced to permit a thorough examination of her spine; her back from her head to her heels was exposed. As she stood with her back towards the window, a lateral curvature was at once observed; but at the same time the line of the nates was found oblique, and the gluteo-femoral fold of right side was much lower than on the left side, showing at once that asymmetry of the lower extremities existed, which fully accounted for the curve. The right lower extremity was raised by placing books under the heel so as to equalize the limbs and the right was found to be one and one-quarter inches shorter than the left. With this correction of the asymmetry, the curvature vanished, and not a trace of the deformity could be found.

The plaintiff's medical attendants were then convinced that the curvature was a condition of early life, and had no relation to the accident; yet nervous shock, lost time and wound of forehead were deemed sufficient to claim damages and suit for $15,000 was pressed.

Just before the trial, a settlement for $2,500 was effected. The plaintiff, who came walking into the room on crutches and markedly lame to receive a check and sign a release, immediately after this, got up, walked out without the crutches and without any lameness; shortly after this she was married and up to last accounts was in good health.

Case 6.—Action against the Philadelphia Traction Railway Company for $10,000 damages for personal injuries.

On August 26, 1889, at about eight o'clock in the evening, Mrs. M., a married woman, was a passenger as far as the depot in Philadelphia. After safely alighting from the car, she fell on the wooden floor, some five feet away; the conductor assisted her to rise, but she claimed she was unable to walk. A grocery-man near at hand had her taken home in his wagon.

The woman was attended by a physician, who sent word to the company that she had broken several ribs, seriously injured her arms and legs, and as a result of the fall had aborted, and that the fetus was preserved in alcohol.

The medical examiner sent by the company to make a report stated that he saw injuries upon the arms and legs, that she was plastered and bandaged in the usual manner for fractured ribs, and also stated that as the doctor was a reputable physician, he accepted his statement that the ribs were broken.

Subsequently the husband of the woman, and a friend, went to the office of the company and endeavored to secure a settlement for the injuries sustained by Mrs. M., and for expenses incurred.

The company declined to consider any proposition, and suit was brought against them. The severe injuries which it was claimed the woman had received attracted the attention of the legal counsel of the railroad, who, suspecting fraud, directed an investigation, which developed the following remarkable state of affairs:

The woman, Mrs. M., was intimate with the physician; that she had not sustained any injuries whatever, and was not pregnant at the time of her fall in the depot; that the alleged injuries on her arms and legs were specific ulcers; she had been under treatment for constitutional disease and for ulceration at one of the Philadelphia dispensaries some time prior to the accident. That the fetus was obtained by the doctor from a girl of loose morals who lived in the house adjoining the plaintiff; that the doctor had produced an abortion on her when she was about four months pregnant; that another physician stated that he was called upon to stop the girl from bleeding to death after the criminal operation; that this girl was intended to be a witness in the suit for damages to prove the accident, and to state that she was a passenger on the car at the time. That the husband and his friend tried to make arrangements to purchase other witnesses to testify to seeing the accident; that the two women, Mrs. M. and the girl, picked up two men on the street, with whom they had oysters and liquor, and these men were asked to become witnesses, and were promised money for the same.

It was also discovered that Mrs. M. was on the floor playing with puppy dogs immediately after the accident, showing that serious injury of the limbs and broken ribs were most improbable.

Upon this report, the parties were all arrested and tried before Judge D. Newlin Fell in the Court of Quarter Sessions, and after two full days' trial the defendants were all convicted, and were sentenced to fifteen months' imprisonment.

Case 7.—Injury due to negligence of the claimant, followed by hysteria and simulated loss of power. After accepting compensation, confessed to having wrongfully taken the money.

Miss B. stepped from the platform of a car while the latter was in motion, and in getting off faced the rear of the train, and had no recollection of stepping off, but found herself sitting on the ground bewildered. The conductor came to her and said, "Are you hurt? Can you walk? You should not have stepped off backward." Miss B., however, walked to the office of a medical man in the neighborhood, where she remained an hour and a half, was then taken to her home, and was confined to her room for some six weeks. She became insomnious and lost considerable weight. Some weeks after the accident she had a hemorrhage, apparently from the lungs; eight weeks after the injury was walking about, went on a short journey, and after this went about as usual. Damages to a large amount were claimed.

On examination, Miss B., who was thirty-eight (38) years of age, not usually emotional, but nervous and spare frame, complained that she was unable even to do any light work, and that her health had been broken up. Careful inquiry failed to detect any malady or any result of the accident; but she continually referred to compensation, and the effort was obviously made to make out the case as serious as possible.

Miss B. may have been somewhat contused and shocked, and subsequently became unnerved, hysterical and prostrated. That great exaggeration of her symptoms existed, was demonstrated when she was asked to lift one foot and then the other upon a chair; this she appeared unable to do, indeed affected not to have the power to accomplish the act. Since it had been shown previously that there was no loss of muscular power, the effort to deceive was very apparent.

There was no evidence of permanent injury; her nervousness was aggravated by too much sympathy by her friends of the church, who constantly condoled with her.

Soon after this the case was settled for one thousand dollars ($1,000).

Some months later a lady called upon me, and seemed surprised that I could not recognize her; she then said, "Do you not remember Miss B.?" and then remarked, "I have felt as if I must see you and say that I ought never to have taken one penny from the railroad company; it was not right." And as suddenly she left.

These cases are not detailed with any idea that the presentation of the facts will make any difference in future trials of railway cases, or that verdicts will in any wise be different: yet it is well, perhaps, to place the histories of such cases before one another, so that we may be on guard in examinations, especially of persons who claim to have been damaged in railway accidents, whom we, from our observation, are led to believe are attempting deception.

AURAL VERTIGO (MENIERE'S DISEASE.)

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-fourth Annual Meeting of the American Medical Association.

BY L. HARRISON METTLER, A.M., M.D.

CHICAGO, ILL.

The classical experiments of Flourens, in which destruction of the semicircular canals resulted in unstable equilibrium, were so brilliant and apparently so conclusive that it seemed very proper to attribute the vertigo in so-called Meniere's disease to the hemorrhagic obstruction and consequent interference with the normal function of these same organs. Medical literature abounds with cases wherein a sudden attack of vertigo associated with loss of hearing was diagnosed as hemorrhage into the labyrinth, without further investigation into the correctness of the inference. I have never felt convinced that such an explanation was the true one for the majority of these cases. In the first place, vertigo is a mental phenomenon of far too complicated a character to presuppose so simple an origin. In the second place, it is not positively proved that the semicircular canals preside over the maintenance of general equilibrium, for experiments have been made which indicate that they subserve in some way the purpose of hearing rather than that suggested by Flourens. In the third place, neither physiological experiment nor pathological observation are sufficiently abundant to show that the canals alone are responsible for the vertigo. Other intracranial structures have, in the majority of cases, been injured along with the canals. And finally, the absence of any positive postmortem examination showing involvement of the canals only, forbids all dogmatic assertions in regard to them being the source of the vertigo in Meniere's disease.

I will briefly consider each of these arguments and analyze a few reported cases; but before doing so I will refer to two cases that have fallen under my own observation, both of which presented the typical picture of Meniere's disease, but in which the cause of the vertigo could be easily explained otherwise than as a hemorrhage into the semicircular canals. The details of my first case will be found in the *Journal of Nervous and Mental Diseases* for January, 1891, page 19.

E. M., a German woman, 45 years of age, having a good family history, had been subject to attacks of malaria, rheumatism, asthma and dyspepsia. The pulse was rapid, irregular and tumultuous, while the sounds of the heart indicated marked insufficiency of the mitral valve, the result of an old endocarditis. Being a hearty eater, the patient retired one evening in March, 1890, after indulging in a full meal, and was suddenly awakened about two hours later with a horrible nausea and distress in the stomach. There was intolerable vertigo, violent vomiting and severe frontal headache. The vomiting continued in the morning and the dizziness became so great that standing upon the feet was absolutely impossible. The vertigo was both subjective and objective, for she beheld objects swimming about the room while at the same time she felt herself whirling about like a top. It was in the morning that she first noticed the loss of hearing in the left ear. The deafness was complete, but there was marked tinnitus, which the patient described as a "pounding on metal," alternating with a peculiar noise like "a group of birds in the grass." I could discover nothing abnormal with the ears externally. After treatment some time with the iodid of potash, the patient improved, and consented to have her ears examined by Dr. Chas. S. Turnbull. The Doctor wrote me his opinion, which will be found with the more detailed report of the case in the journal cited. The general condition of my patient, the suddenness of the attack, the unilateral character of the affection, the limited nature of the symptoms, the gradual and permanent amelioration of the vertigo, the total loss of hearing and the absence of more positive bulbar and aural signs inclined me to regard the lesion as that of an embolus in the auditory artery.

My other case I saw about a year ago. The woman was about forty years of age, with a good family history, and with the full phlegmatic type of constitution. There was no apparent cause for the trouble, as there were no symptoms of any special disease as in the former case. She was married, but childless. She retired one night seemingly perfectly well, and awoke suddenly after a few hours with a roaring sound in the head, accompanied by intense nausea and dizziness. In the morning she found herself totally deaf in both ears. An examination of the ears revealed nothing abnormal externally. Various lines of treatment proved inefficacious, and though the vertigo soon vanished and the patient regained the best of health, there was still no indication of the slightest return of the hearing. In both of these cases Charcot's treatment with large doses of quinin proved entirely futile.

The mental phenomenon known as vertigo, reveals upon close study, a far more complicated nature than a mere disarrangement of the function of any one organ, such as the semicircular canals. The study of vertigo alone is one of the most intricate in medicine, and though we are quite familiar with its subjective and objective manifestations its immediate cause remains yet a profound mystery. The maintenance of equilibrium can not be satisfactorily assigned to any single center, though its disturbance may easily depend upon a number of distant reflex disturbances. There is a multiplicity of impressions constantly pouring in upon the brain through the various avenues of sensation which must necessarily keep the mind in a state of extreme tension, so that the slightest exaggeration one way or the other will result in mental confusion and more or less vertigo. We learn instinctively how to control and marshal these ever passing sensations before the mind, but if for a time they become too frequent, rapid or sudden, the controlling force of the intellect is weakened and we are confused and overcome by them. Everybody knows how quickly vertigo is established by rapidly revolving mirrors, peculiar whirring sounds, electrical sensations upon the skin and such distant irritative conditions as dyspepsia and constipation. Physiological psychologists are agreed now that our knowledge of the relationship of things, as well as of space and its dimensions, is the result of experience gained from the use of our muscles. The infant learns these dimensions by the frequent application of its hands to the objects which it sees; and the sight, which is the only other sense that reveals to us an extended object, and that never shows us more than two dimensions at one and the same time, does so entirely through the "muscular sense" exercised in the use of the muscles of the eyeball. Now when we study the nature of equilibrium we discover that it is dependent upon a normal consciousness of the proper relationship of things outside of the centers of consciousness. It is not purely psychic as some have imagined. There is the sensation of a motor process in it. Dr. Hughlings Jackson has long insisted upon the importance of this fact, while Dr. Reynolds wrote as long ago as 1854 that "the feeling of equilibrium results from the harmony of our different sensations among themselves and with the motor impulse which is their combined effect. When any one group of the sensorial impressions is distorted or removed, the balance is disturbed and as these impressions are themselves the stimuli of muscular action, attempts are made for its restoration . . . . producing vertiginous or allied movements." The principal factors in the preservation of equilibrium are therefore consciousness and normal sense impressions. A vertiginous impression reflected through consciousness may end in a complete or incomplete motor act. In the latter case there is merely a residual disturbance of past impressions without a fulfillment of the present impulse in complete motion, while in the former the patient is uncontrollably moved in one direction or another.

If the views of Spitzka and Starr in regard to the sensory paths in the medulla be correct, they bear strongly in favor of this sensory motor theory of vertigo. Thus Spitzka concludes that impressions from the cochlea reach the cortical centers in the superior temporal gyrus by way of the posterior division of the eighth pair of nerves, the trapezium of the same size, part of the lemniscus, posterior pair of the corpora quadrigemina, external geniculate body and the corona. According to some late observations of Starr which prove the correctness of the views of Flechsig and Von Monakow, the lemniscus tract is associated with the so-called "muscular sense" and is chiefly distributed to the inferior quadrigeminal body. Some physiologists think that it is even continued up as far as the corona. It is believed that this tract is associated with the sense of sight, as well as with the coördination of movements. Flourens found that injuries to the corpora quadrigemina of one side caused "forced movements," and that their complete removal resulted in incoördination of movement, yet we have no knowledge of any connection between these bodies and the cerebellum, though it is barely possible such a connection does exist. At all events the point which I desire to insist upon is the close relationship of all these tracts for sight, hearing and the "muscular sense" in the corpora quadrigemina and their more distinct termination in the cerebral cortex than in the cerebellum. If vertigo were a kind of encephalic ataxia, and due simply to disturbed coördination, it might readily be attributed to the cerebellum and then the *probable* connection of this part of the brain with the organs of sight, hearing and muscular sensibility would easily explain the vertiginous sensations in disease of any of these peripheral end-organs. While the function of the cerebellum may be that of coördination and the maintenance of "continuous tonic muscular contractions" and while as Spitzka tersely remarks, it may be the center where "impressions of touch and position are associated with those of time and space," I find no authority for assuming that it is in any way the center for the institution of movements or the maintenance of these movements in a regular, methodical manner, which, to my mind, is the underlying phenomenon, objectively or subjectively, of true vertigo. Vertigo is something more than simple incoördination, though incoördination may enter as one of its principal elements. In vertigo there is a disturbance, not merely of the reflex functions but of the higher powers as well. The motor and sensory phenomena of vertigo, in typical cases at least, are not mere sequences of abnormal motor and sensory impulses, but they are the impulses themselves. The distinction which I am endeavoring to make is the same as that between the ataxic movements of

posterior spinal sclerosis and the spontaneous movements of chorea. In the one case there is the retention of power, but the loss of coördination; in the other there is loss of power with or without coördination. Simple incoördination manifests itself in irregular unmethodical movements and thus shows that it is due to an affection of some subordinate regulating center of the brain; true vertigo, like chorea, manifests itself in regular methodical objective movements and thus reveals disease of a higher independent center.

It is a significant fact, when considered in this connection, that the vertigo which is so characteristic of cerebellar disease and which is identical with the vertigo of Meniere's disease, is caused only by lesions in the middle lobe or that part of the cerebellum which is most liable to involve the sensory-motor tract of the medulla; and furthermore, that lesions of the lateral lobes not pressing upon or involving the middle lobe do not give rise to any known symptoms. And it is still more significant that vertigo is not pathognomonic of cerebellar disease, for it may be caused by lesions in other parts of the brain as well. Even in its coördinating function, it is more than probable that the cerebellum, instead of sending out direct coördinating impulses to the muscles, merely coördinates the impulses sent down from the cerebral centers above. Indeed, as Ranney has said, "it is a curious fact that most of the effects of cerebellar lesions are attributable, to a greater or less extent, to irritation of the crura."

According to Goltz, Serres, Cayrade and others, the function of equilibrium is profoundly affected by destruction of the corpora quadrigemina. The experiments of Ferrier upon monkeys, fishes and rabbits, and of McKendrick upon pigeons, revealed the same effects. The corpora striata have also been shown by physiological experiment to preside over the maintenance of equilibrium, especially after the removal of the hemispheres. Every indication points to the fact, then, that we must look for the center of equilibration not in one particular part of the brain, but in the harmonious action of the various sensory and motor centers one upon another.

Now for the application of all this. One of the most common peripheral disturbances of this sensory-motor equilibrium is disease of the ear. Hecker has said that "the ear is the most intellectual of all the organs," and in regard to its effect upon the mind, both in health and in disease, it is indeed second in importance only to the eye. Without stopping to consider the many causes of vertigo in connection with the external and middle ear, I will at once consider the question of labyrinthine vertigo. It is pretty generally considered now that only the semicircular canals are affected in *true* Meniere's disease. At least that is what Meniere himself seems to have believed. His second and fourth propositions are that certain functional troubles, having their seat in the *internal auditory apparatus*, may give rise to cerebral symptoms such as intense vertigo, uncertainty of gait, turning to the right or left and falling, all of which may be attended with nausea, vomiting and syncope, and that all this tends to confirm the belief that the lesion which is the cause of these functional troubles is in the semicircular canals. In his original paper he described ten cases, in only one of which was there an autopsy. This case, the tenth of the series, had no disease of the nervous centers, but the semicircular canals were filled with a "reddish, plastic material." It was on the strength of this single observation that he declared the canals to be the cause of the cerebral symptoms. Aside from the unscientific character of such a hasty generalization, this one case, as Bremner points out, will hardly explain those in which the cerebral symptoms come and disappear rapidly. And if the hemorrhage into the semicircular canals were the cause of the trouble here and in the majority of the apoplectiform cases, as Knapp argues, it remains to be shown why the hemorrhage should be bilateral, since the aural symptoms are so frequently bilateral.

Ever since the first announcement of this affection there has been much confusion in regard to it. Disease in any part of the internal ear, and even of the middle ear, has been called Meniere's disease, though, as we have seen, Meniere himself was careful to restrict the lesion, in its apoplectiform form at least, to the semicircular canals. Knapp, whose paper upon the subject is second only to that of Meniere himself includes all affections of the entire internal ear, irrespective of their causes, under the name of Meniere's disease. I have examined his cases and fail to see why he should insist so positively upon the inner ear as the source of the vertigo and other cerebral symptoms. In his third case, which he is careful to specify as a fair example of Meniere's disease, one of the most prominent symptoms was diminution of the sight—a condition which remained after many of the other symptoms had vanished. After discussing in full, Voltolini's famous case in which an autopsy revealed an extensive leptomeningitis with pus at the base of the brain, in the pons, medulla and cerebellum, and some hemorrhage into the labyrinth of the ear, he makes the sweeping generalization that "the changes in the nervous apparatus of the labyrinth consequent on the hemorrhage must have been such as to destroy the hearing function forever." Thus he totally ignores the possibility, and in Voltolini's case the extreme probability, of the central injury being the cause of the deafness as well as of the vertigo and other symptoms. In Politzer's case, with autopsy, there was a fissure of traumatic origin at the base of the occipital bone which probably was the cause of the meningitis of which the patient died. Pain at the base of the brain was here a marked symptom. Both Politzer and Lucae report cases in which the semicircular canals were absent or filled with blood, and yet the patients did not suffer from any disturbance of equilibrium. In the *Lancet* of May 16, 1891, Ferrier reports the case of a man 36 years of age who was stricken with total deafness in both ears after experiencing a sound like an explosion in the head. The ear appeared to be normal, and the diagnosis was hemorrhagic effusion into the labyrinth without cerebral involvement. And yet there seems to have been no pronounced vertigo. In most of the reported cases of Meniere's disease that I have seen, while there was a possibility of the ear trouble being the origin of the special symptom group, there was an equal possibility, and in very many of the cases a strong probability, that the more prominent symptoms were due to a central or medullary lesion, and that the aural symptoms were merely a coincident member of the group.

Gowers, who is one of the strongest advocates of the labyrinthine origin of vertigo, adduces five argu-

ments in favor of his position. His first is based upon the number of cases reported by Meniere and others. I have already shown how inadequate are the proofs from this source. His second is, that irritation rather than mere loss of function in the nerve is proved by the disease being attended with severe vertigo, which may cease when the progress of the disease has produced complete deafness. There is usually so little correspondence between the severity of the vertigo and the amount of the deafness, as Gowers himself remarks elsewhere, that this argument fails.

His third is, that in the majority of the cases of definite vertigo, the slight or considerable tinnitus that is present is evidence of a process of irritation of the fibers of the nerve. That is true, but the argument is no proof of the source of the irritation being within the semicircular canals or labyrinth. Tinnitus is not an unusual symptom of certain extra-labyrinthine lesions. His fourth argument is, that slight loss of hearing, tinnitus and vertigo may be observed not only to come on together but to pass away together. I fail to see that this proves anything more about the labyrinthine origin of the vertigo than does the previous argument. Lastly, he asserts that "the frequency with which symptoms of labyrinthine disease are found in cases of vertigo is itself a fact of very great significance. Of 106 consecutive cases in which definite vertigo made the patient seek advice, in no less than ninety-four, ear symptoms were present, tinnitus or deafness, or more often both."

The figures are undoubtedly significant in proving the frequent association of vertigo with auditory symptoms, but they are scarcely commendable as an argument of the labyrinthine origin of the vertiginous sensation. It seems to me, therefore, that these propositions, which I have presented almost in the author's own words, do not make out a very strong case in favor of the labyrinthine origin of the vertigo; certainly not sufficiently so to warrant the large percentage of cases of vertigo which this writer attributes to diseases of the internal ear.

It seems to me, furthermore, that he is almost self-contradictory upon this subject. He lays stress in aural vertigo upon the coincidence of the auditory symptoms with the vertigo, and shows that this is due to the continuity of structure in the cochlea and semicircular canals. He says, "it is conceivable that labyrinthine vertigo may occur without any auditory symptoms. I have actually seen two or three cases in which definite giddiness existed alone and in which auditory symptoms came on later." Then when I turn to his account of gastric vertigo, I find this: "I do not think it is quite certain that there is such a thing as definite vertigo of purely gastric origin. . . . . We know that in 95 per cent. of the cases of definite giddiness a morbid state of the labyrinth is the real cause of the vertigo." This leads us to infer, then, that in 95 per cent. of the cases of vertigo there are distinct auditory symptoms. Few general practitioners will be prepared to admit so sweeping an assertion. Would the author have us believe that in the vertigo of seasickness, which is now pretty generally attributed to the disturbance of the visual reflex, there is also a morbid state of the labyrinth? If so, his dictum in regard to the ever present auditory symptoms does not hold good here.

After admitting the implication of the semicircular canals in aural vertigo, it still remains a difficult matter to explain the vertiginous symptoms and loss of hearing upon this hypothesis in all cases. The first case which I have reported might easily have been regarded as one of Meniere's disease, and yet there is no reason to suppose that the vertigo and deafness were due to disease of the semicircular canals. I believe that the function of these canals in the maintenance of equilibrium has been much over estimated, certainly too positively inferred in view of the slight physiological and pathological data which we have as yet for such an inference. Simple puncture of the auditory nerve in rabbits gives rise to rotary movements on the part of the animal, and it is a well-known fact that injection of water into the external ear, as well as inflammation of the middle ear, causes vertiginous sensations. In these cases there is present the sensory-motor disturbance, but can we suppose that in all of them the semicircular canals are so grossly affected as to be the only immediate cause of the vertigo?

Both Steiner and Sewall carefully removed the semicircular canals from the shark, whose auditory apparatus is practically identical with man's, without obtaining any disturbance of movement. The former experimenter believes that the loss of equilibrium results from lesions of the brain or its membrane, causing alterations of pressure, for he has again and again destroyed the canals in sharks, frogs and lizards without injuring the brain, and discovered no disturbance in the power of equilibration. After careful investigation Böttcher and Baginsky have come to the conclusion that the cause of the rotation of the head in Flourens' and Goltz's experiments was the injury done to the brain, and not merely to the semicircular canals. Böttcher marks the fact that the auditory nerve is not bound down at any point between the brain and the labyrinth, and that if one is careful not to pull upon this nerve the vertiginous sensations are not awakened by the injury of the semicircular canals. The slightest traction upon the auditory nerve injures its attachment at the medulla, and so gives rise to the symptoms described by Flourens, Cyon, and Goltz. In the experiments of Böttcher the head, furthermore, did not always rotate in accordance with the particular canal injured, as Goltz had formulated. The identity of these canals with the cochlea in the embryo, their continuity with the epicerebral space through the aquæductus vestibuli, and their ever-shifting relations amongst themselves in the quadrumana, which go about sometimes in the horizontal and sometimes in the erect position, argue strongly against the special function of these canals being the maintenance of equilibrium. In the discussion of my paper upon the same subject before the Philadelphia Neurological Society, Nov. 24, 1890, Dr. Dercum reported some observations he had made of the comparative anatomy of the labyrinth for the purpose of securing new light, if possible, upon the function of the semicircular canals. He said: "They bear a distinct relation to the lateral line organs of fishes, the nerve hills of the latter being identical in structure with the maculæ acousticæ. Just as the inclosure of these nerve hills in tubes seems to have for its object the gaining of distinctness and definiteness of impression, so the inclosure of the maculæ within the semicircular canals seems to have the same object. It is significant that each macula is

situated at the *end* of a canal, and this suggests that the canal is a kind of conduit to carry off vibrations after they have made their impression on the macula; and further, that if interference of vibration occurs, it occurs at a point *distant from the macula*. Confusion of sound is thus avoided. The inference from physiological experiment that these structures have for their special object the maintenance of equilibrium, has always seemed to me open to most serious objection." It is a well-known fact that many fishes have a utricle and three semicircular canals, while some have only one and two canals. Amongst the lowest vertebrates the lamprey has a saccule with auditory hairs and otoliths in communication with two semicircular canals, while the myxine or hag has only one canal. Doubtless there are important sensory impulses of a special character which pass through these organs, but equilibration, due as we have seen to the fusion of a vast complex mass of sensations pouring in upon the brain from all sides, can not possibly be the result of merely a single set of impulses from such an end-organ as the semicircular canals. The very nature of vertigo involves the idea of more or less loss of consciousness, and this alone would seem to indicate a higher cause for the trouble than simply these canals.

If it be granted that the pathological cause of this vertigo is to be found in the semicircular canals, it is hard to understand how in all cases the cochlea or the cochlea branch of the auditory nerve should necessarily be affected. In Flourens' experiment, the entire removal of the canals did not impair the hearing. So striking was this fact, that Flourens as well as others was led to believe that the branch of the auditory nerve which supplies the semicircular canals subserves motor purposes only. On the other hand, if Gelle's experiments are to be trusted, the cochlea is in no way the source of vertiginous impressions. Simple continuity of structure will not account for the loss of hearing when the lesion is a hemorrhage into the canals, and pressure alone will not answer as a cause in all cases of so-called Meniere's disease. In the first place, there is no regular correspondence between the amount of deafness and the intensity of the vertigo; secondly, with total loss of hearing in Meniere's disease all known methods of diagnosis prove that the nerve itself, and not merely the internal ear, is affected; thirdly, physiological experiment shows that simple pressure does not cause total loss of hearing when no injury is done to the cochlea or cochlea branch of the auditory nerve; and finally, no case has ever been reported in which the cochlea was primarily affected with consequent involvement of the canals and vertigo, though in blood supply and anatomical structure the cochlea and canals are similar. Hence, in Meniere's disease, I conclude that the lesion must concern the whole labyrinth or lie entirely outside of it.

It was Dr. Wilks of England, I think, who held that Meniere's disease was a neurosis of the centers of audition and equilibrium, and in its paroxysmal form at least was much like migraine with its eye complications. While this explanation can not be adopted for all cases, there is little doubt about the central nature of the disease in many of its aspects. Burnett declared that "the neuropathic diathesis is well marked in most cases of aural vertigo." The grouping of the symptoms, as well as the proximity of the tracts and centers involved, point to the encephalic origin of the affection. Especially is this indicated, however, by the sensory-motor nature of the vertigo, whatever be the peripheral source of the disturbance, and its association with the state of consciousness.

Running between the superficial and deep roots of the auditory nerve are the external and internal divisions of the inferior peduncle of the cerebellum. According to Spitzka and Edinger, the posterior nerve root transmits sound impulses, while the anterior root is the path for the impressions which assist in the determination of the equilibrium. Some of the motor fibers of the auditory nerve pass to the ampullæ of the semicircular canals, while others are doubtless associated with the anterior root in particular and the peduncle of the cerebellum. Thus the close connection between the nerve of hearing and the sensory-motor tracts in the medulla, as well as the proximity of the auditory and pneumogastric nuclei, account for the frequent association of the symptoms, deafness, vertigo and vomiting. Any disturbance, then, in the course of the auditory tract, such as in the case I have reported, is liable to give rise to Meniere's symptoms. The lesion may assume many forms, but the important point is, that it need not be necessarily limited to the labyrinth. In many of the cases reported the probability is that it was altogether extra-labyrinthine.

In conclusion, I would assert that in Meniere's disease the source of irritation may sometimes be in the semicircular canals, just as sometimes it may be in the eye and in the stomach, but that the immediate cause of the vertigo can not be there for several reasons:

1. If the above explanation of the nature of vertigo be correct, it is a condition dependent upon the inharmonious interaction of the sensory-motor centers of the cortex.

2. If equilibrium depended solely upon the semicircular canals, there could be no rational explanation for the ocular and stomachal vertigos.

3. If the proximity of the various nuclei within the medulla be a sufficient explanation of the association of the symptoms, vomiting, unconsciousness, vertigo and loss of hearing when the semicircular canals are affected, why, we may justly ask, do we not in stomachal, lithemic and other vertigos of reflex origin have more frequent and more marked auditory symptoms?

4. Experimental injury to the semicircular canals is not followed by true vertigo, loss of hearing and the other constant symptoms of Meniere's disease.

5. Pathological data do not entirely and satisfactorily support Meniere's hypothesis. His only case with autopsy can easily be explained upon other grounds, and nearly all of the other cases reported by Politzer, Voltolini, Knapp and others had severe cerebral lesions, sufficient to account for the symptoms presented or were unproved by postmortem examination.

Finally: It is to be noted that of Bezold's carefully collected forty-six cases of necrosis of the labyrinth, only twelve manifested symptoms of vertigo.

Burnett says, "aural vertigo may be termed a reflex cerebellar phenomenon from irritation in the auditory apparatus." That may be true as far as it

goes, but, from what I have endeavored to show, aural vertigo may not be aural at all, except only so far as having certain anral symptoms associated with the vertigo; and we are not justified in view of the few physiological and pathological data still at hand, in assigning all cases of vertigo with loss of hearing to an unknown and undemonstrable lesion of the internal ear.

DR. HUGHES—I believe that we are approaching a better explanation of the vertigo connected with Meniere's disease as well as vertigo connected with cerebellar diseases. If we adopt the current explanation of labyrinthian vertigo what are we to do with the vertigo from a stomachal lesion? What are we to do with vertigo caused by irritation in other peripheral areas and what are we to do in regard to the cerebellar vertigo? Now if you look into the results of therapy in these cases, the history of cerebellar abscess as well as of Meniere's disease in connection with the treatment as it usually suggests itself, you will find that the symptoms of vertigo are very greatly ameliorated and often caused to disappear entirely under judicious treatment to diminish the irritation, of which the author speaks in his paper, which gives us unequal arterial blood supply in all probability. That thing was very forcibly impressed upon me a number of years ago in a case which was reported in a journal of nervous and mental diseases, of cerebral vertigo in which the individual described had the gait characteristic of cerebellar disease, had the vertigo characteristic of that disease and was disposed to walk in a circle after the manner of birds experimented on by Flourens, when he first promulgated the doctrine and gave us the cue to the characteristic symptomatology, or what we supposed to be the characteristic diagnostic symptomatology of cerebellar disease. The first case in which I observed this and the beneficial results of treatment, keeping the portal circulation constantly depleted, the bowels active without fail each day, and putting the patient under bromids, and strychnia, resulted very satisfactorily; the patient was enabled to go about the streets of St. Louis unaccompanied and presented the appearance of a person who was recovered; so much so that his wife believed him recovered, and yet the man actually died suddenly of a rupture into the fourth ventricle, the cerebellar abscess having found its way thither. The case is on record and well known. The first case that called my attention to the fact that it was possible to ameliorate and obliterate the distinctive vertigo of cerebellar disease was this, and yet the cerebellar disease persists and the same has been found true in my experience in regard to labyrinthian vertigo, and I believe that clinical observation confirms the suggestions made by the author in his paper.

ADDITIONAL EXPERIENCES IN THE HYPODERMIC USE OF ARSENIC.

Read before the Section of Neurology and Medical Jurisprudence, at the Forty-fourth Annual Meeting of the American Medical Association.

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In a former communication [1] we called attention to the value of the hypodermic method of giving arsenic and reported some eight cases all told in which it was employed. Since that time a large additional experience with the method has but confirmed our previous good opinion. The list now includes twenty-eight cases of chorea, three of paralysis agitans and eight cases of neurasthenia.

The hypodermic use of Fowler's solution has been recommended by numerous writers. Hammond [2] claimed that the dose which could be administered in this way was much greater than could be safely administered by the mouth. He says:

"I have frequently given as high as 35 drops of Fowler's solution as an initial dose. It is very certain that the stomach would not tolerate this quantity. Again, I have often carried the amount given by the mouth to the utmost bounds of prudence—till the eyes were puffed and vomiting almost incessant—and then have continued the arsenic in larger doses, by hypodermic injections, with the result of the cessation of all gastric symptoms and the cure of the disorder."

Dr. Frühwald [3] treated twenty-two cases of chorea minor by this method. He says that redness of the skin at the site of the punctures was common, and two or three abscesses formed. The dose was from 5 to 20 drops, and after the use of thymol and deeper injections no further trouble was observed.

Grunnach [4] treated one hundred cases of goitre with hypodermic injections of Fowler's solution, 1 part to 4 of water.

Dumont [5] treated twenty-six cases of goitre with injections of 10 minims of Fowler's solution.

It has been noted by former experimenters who have employed arsenic hypodermically that there was a decided tendency toward the development of abscess as well as painful cutaneous inflammation. These writers have invariably employed Fowler's solution and its irritating effects were attributed by some to a septic condition of the solution and by others to the spirits of lavender used to color it. Prof. W. S. Haines suggested that the irritating properties of Fowler's solution when injected into the cellular tissue was probably due to the free arsenious acid usually contained in the preparation as found in the shops, and that these might be obviated by using the arseniate of sodium, a stable salt, readily soluble and of definite composition. Dr. Haines recommends that the pure anhydrous salt be used; as ordinarily found in the shops it may contain from four to twelve molecules of water of crystallization. If this be driven off by heating to 300 degrees the resulting salt has a definite composition with the formula $Na_2 H. As O_4$; a 1 to 100 solution of this salt contains 53 per cent. of the arsenic found in Fowler's solution, so, approximately, the dose of such solution should be about twice that of the liquor potassii arsenitis.

Arsenic is one of the peculiar and exceptional remedies that is much less poisonous when exhibited beneath the skin than when given by the mouth. The reason for this is shown by the fact that arsenic like several metallic poisons focuses itself largely about the upper end of the small intestine, stomach and liver, and toxic symptoms even if the arsenic is given in large doses under the skin will not appear largely in those organs. Thrown into the cellular tissue it is at once absorbed into the general circulation and is distributed to all parts of the system, while if given by the mouth it may make the rounds of the portal circulation several times before entering the general circulation. It is this peculiar fact that makes arsenic

[1] Therapeutic Gazette, January, 1891.

[2] Nervous Diseases.
[3] Jahrbücher für Kinderheilkunde, 1887.
[4] Schmidt's Jahrbücher, cex. p. 195.
[5] Corr. Blt. für Sch. Aerzte.

and mercury so much less irritating when given beneath the skin.

The use of hypodermic injections of the arseniate of sodium is entirely free from the objections noted in the use of Fowler's solution. I have given more than five hundred injections of strengths varying from 1 to 10 per cent., and have never noted any irritation, tumefaction or anything approaching an abscess. Indeed, the solution is as free from irritation as is the use of simple water and any redness or slight ecchymosis following the injection is invariably due to carelessness in manipulating the syringe.

The average dose of Fowler's solution given by the mouth varies from five to fifteen minims; perhaps the most usual dose is seven and a half to nine minims, and I think very few of us write prescriptions for quantities of arsenic exceeding nine minims in a single dose. Of course, we may give it by the cumulative method, increasing each dose and then decreasing it, reaching nine to twelve minims, but certainly those are rather extreme doses.

The quantity of arsenic in one grain of arseniate of sodium is 53-100 of the quantity found in one grain of arsenite of potassium; that is, a 1 per cent. solution of the arseniate of sodium should have approximately about twice the dose of a 1 per cent. solution of arsenite of potash or Fowler's solution. As a matter of fact, I have exhibited an arsenic equivalent in the arseniate of sodium of 40, 50, and 60 minims of Fowler's solution at a single dose, and it is my common practice to give an equivalent dose of 30 minims of Fowler's solution as my initial injection. The highest that I have ever reached is the equal of three-quarters of a grain of the arsenite of potash; that is, equivalent to 75 minims of Fowler's solution at a single dose, and this without producing more than the slightest toxic effect.

I think that the method is worthy of more extended trial, and it certainly in my hands has given exceptional results in the treatment of chorea. I have not found it to be of any value in paralysis agitans or cases of neurasthenia in which I employed it; but in chorea it has certainly exceeded any drug I have employed heretofore, and has far exceeded in efficiency and in cutting short the duration of the disease, the employment of the Fowler's solution by the mouth; this I attribute of course to the larger dose given and the fact that the salt is brought immediately in contact by the blood with the nervous system without having first passed the liver.

We certainly hope that while this method is so free from inconvenience and the drug is of such power that we shall hear of its use in malarial affections and in diseases of the skin. In these latter disorders we should certainly expect to hear of better results than have been reached in neurological practice.

Dr. J. F. Hibberd—I suppose the doctor has met with some failures in his treatment. What proportion do the failures bear to the successes, if there be observations which would enable him to make that statement? I perhaps am now particularly interested in the matter because I have a family of choreic people; the father and mother have had it, the two daughters have had it turn about for two or three years, and I have tried about everything that I have known of others using with any success; but I think with all of them that the affection wears out; that is a good thing; sometimes, however, it does not wear out, but keeps on; but if your preparation of arsenic and soda will shorten the period of duration, even if it does nothing that we can measure accurately, it will be of great benefit to the general practitioner.

Dr. Daniel R. Brower—I know nothing specially about the use of the arseniate of sodium hypodermatically as Dr. Moyer suggests, but I have no question as to its value from his statements; but I desire to testify to the fact that the arseniate of sodium is a very much better remedy to use in the treatment of chorea given by the stomach. I have been for years using the liquor sodii arsenatis, because the soda salt of arsenic is very much better tolerated by the stomach, and I have succeeded in giving by the stomach without discomfort to the patient, without toxic symptoms, sometimes doses double the size that could have been given of the arsenite of potassium. I am speaking, of course, of its administration by the mouth; and given in this way I have found it a very valuable aid to the general treatment of chorea. Speaking about the treatment of chorea, I have had some recent experiences with the line of treatment suggested, I think, by Dr. Wood of Philadelphia; the use of quinia in large doses, and two or three recent cases that have come under my observation have done surprisingly well with moderate doses of the arseniate of sodium and very large doses of the bromid of quinia. I believe there is some advantage in the use of the salts of cinchona, especially the bromid of quinia, in the treatment of chorea. I think the combination of the bromid with the arseniate either hypodermatically or by the mouth, is certainly quite an advance in the therapeutic treatment of chorea.

Dr. C. H. Hughes—I do not believe that arsenic is the best cure for chorea. I know it is the fashion to laud arsenic as the remedy for chorea, but I have not found it as efficient in my treatment of cases as I have the moderate doses of Fowler's solution in connection with the bromid of quinia and the hypophosphites—that is the combination I always use, and I think six weeks is the limit to 90 per cent. of my cases during the last twenty years. I do not believe I recall a case in my practice now, a recent case, at least, that did not recover, with rest and this line of treatment, by the expiration of six or eight weeks. Some cases recovered in four. I have never adopted what I consider the fad of relying exclusively upon arsenic; and in regard to the use of quinin, it never occurred to me to omit the use of quinin in certain obstinate cases of that disease in the Mississippi valley. I suppose it was because malaria entered into the disease as a complication, and it became necessary to eliminate that factor, as it is in so many diseases that we encounter in our practice in the vicinity of St. Louis. I have given very large doses of quinin in the course of treatment of chorea where I had reason to suspect there was a malarial complication or latent malaria as one of the depressing toxic influences operating upon the central nervous system, and I suppose that when the facts are fully learned, it will be found that those cases that yield so readily to quinin are those in which the chorea is really of malarial or toxic origin.

Now regarding the chloral treatment, you know that that plan has been pursued exclusively, so has the arsenic treatment and so has the iron treatment. Dr. Hughes of England, used port wine and rhubarb, taking the children out of school and giving the necessary rest, and he cured his cases. My experience is that the majority of cases will get well, if you remove the pressure that has been on the child, remove the source of depression, of irritation, take the child from school, return the child to childish ways and natural habits of life that belong to children, and improve its nutrition, and you have very little need of the arsenic

treatment. I think in a large majority of cases that time alone will effect a cure; I will not say despite the arsenic, but I will say that time and rest are the essential remedies. and those remedies which conduce to rest of the central nervous system are the important factors; that is why we get cures from chloral given every night and in the daytime as some of our German friends do. That is why you get it from giving the child a vacation, taking it away from school, giving it a change of scene. One of my patients was cured within the last six weeks on a very simple prescription. The child took a vacation and went off to Texas and got well by traveling.

THE CHAIRMAN—I would call attention to the fact that the principal point of this discussion is the hypodermic use of the arseniate of sodium.

DR. FRANK R. FRY, of St. Louis—I think the doctor has fully demonstrated the advantage of his method. I have used the arsenic hypodermically, though I have never used Fowler's solution in that way, but a solution of equivalent strength made aseptically, and I have had a great deal of irritation from it, though I have never had an abscess, but so much irritation that I have abandoned it long ago in the majority of cases, only occasionally employing it when the stomach was absolutely intolerant; and therefore I can corroborate the statement that the doctor has made that it is not the aseptic properties nor the irritating properties of the lavender water or spirits of lavender in the solution that make it irritating, but the salt itself. Furthermore, in having these solutions prepared I was always careful to get a chemically pure salt.

DR. ELMORE S. PETTYJOHN—These cases are usually found in young persons, and there might be a great deal to overcome in giving these injections. How does the doctor manage that matter to the satisfaction of his youngest patients?

DR. MOYER—I regret, since the discussion has taken the range that it has, that I have not here to present to you some of my clinical histories. I did not at first desire to burden this Association with an account of a lot of choreic patients. I conceive that we all see a vast number of them; but I will say to the gentleman who first made some inquiry that I have treated inveterate chorea and the recurrent chorea and chorea in its chronic forms, and I have treated acute chorea, in fact all varieties by this method. Of course the value of any therapeutic measure depends upon the experience of the man that proposes the method, and I can not bring you anything to support it more than my individual assertion. I have treated 500 cases with arsenic given by the mouth and 28 by this method, and I am absolutely surprised and amazed at the results that I have obtained. I certainly think that the average duration of treatment has been very much less than six weeks. I do not think that under this method it has averaged over two weeks. I fully agree with Dr. Hughes regarding many things in the treatment of chorea. It is a self-limited disease; it is a disease whose natural tendency is to get well whether you employ treatment or whether you do not; the patient will get well in the great majority of instances, but I contend that in my experience, specific treatment is useful, and of all methods arsenic is by far the most useful and of all the arsenic methods the hypodermic use of the drug is the best. You can get a much larger quantity into the patient's system without any toxic effect, and you produce a very profound impression indeed, and it has not been an infrequent occurrence with me to have the choreic movements lessen or cease entirely within three days. I understand that there are a great many hygienic measures that can be employed in the treatment of chorea in the better class of patients, but the majority of my cases are out patients in a large dispensary, seven to fifteen years of age, the disease rarely affecting those below the seventh year, and I have been wholly unable to control their diet, and habits of living; many of them are children employed in factories and shops, belonging to the lowest classes in a large city, and it is among this class of patients in which you can do nothing for them except what you do medicinally that I would above all things recommend the trial of the hypodermatic use of this drug.

Regarding Dr. Pettyjohn's question, I would say that the patients perhaps object to it—the little ones do—those that are eight or ten do not seem to care very much. The younger ones you simply take by the arm, the mother holds the other hand, and you give them the injection; that is all there is to it. If they cry a little, why let them cry; but as a rule I have not found much difficulty in giving injections, even in quite young children. The slight prick may be objected to at first, but after one or two injections they generally do not care very much about it.

THE FUNCTION OF THE RIGHT TEMPORO-SPHENOIDAL LOBE.

Read before the Section of Neurology and Medical Jurisprudence at the Forty-fourth Annual Meeting of the American Medical Association.

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In an authoritative work on "Diseases of the Nervous System" recently published, the temporal lobe of the brain on the right side in man is spoken of as one of the "latent regions of the brain, destruction of which, and irritation of which, produce no special or distinctive phenomena." Clinical and pathological evidence bearing upon the functions of the temporal lobes is acknowledged to be scanty at present by no less a specialist on this subject than David Ferrier; and the discrepancies in the results of the many experimental researches upon animals conducted by him, Victor Horsley, and other observers of undoubted merit, cause us to welcome any additional light, however meager, that will aid in clearing up the darkness that still surrounds this region of the human brain.

A most novel and interesting case recently came under my observation in consultation, which terminated fatally within five weeks from the beginning, and in which I had the good fortune to obtain an autopsy, that may in some small degree add to existing knowledge as to the part taken in cerebral action by the right temporo-sphenoidal lobe.

Mrs. G. F., a native of Michigan, 45 years of age, spent the greater part of her life on a farm and was always a hard worker. Her constitution and general health had always been good although she was not robust. She has given birth to two children the younger now being 15 years of age. A few years prior to her last illness she consulted an oculist for a slight impairment of vision in the left eye but it never gave her much trouble. She never had rheumatism, gout, syphilis, cancer or any other serious disease or injury, but she has been a sufferer from headaches for many years. Her father died suddenly, presumably of heart disease in some form. Two of her uncles have died of brain trouble and a sister has epilepsy-gravior; two sisters are subject to severe headaches. Her habits and modes of life were always exceptionally good and regular and her hygienic surroundings were always of the best. She was of a lively and sociable disposition, active and efficient in her circle of acquaintance and much employed with church and Sunday school work. About five years ago she changed farm life for village life and has for four years successfully managed the finances of a moderate estate which devolved upon her at the death of her husband.

On April 3, 1893, while about her household duties she felt

dizzy and sick at the stomach, and she stated to her son who came into the house soon after and found her lying on a couch, that she had fainted in the kitchen and after regaining consciousness which could have been absent but a few moments, she had without assistance walked into an adjoining room and laid down on the couch. While talking with him she had what seems to have been a spasmodic seizure, and again became unconscious. Her physician was summoned who on arriving within half an hour found her with all muscles relaxed except the inferior recti which seemed to be contracted. The heart's action extremely feeble. Ammonia carbonate was injected hypodermically and nitrate of amyl applied to the nostrils. In about twenty minutes some signs of improvement were noticed in the circulation and at the end of three hours the pupils returned to normal condition. She would then swallow liquids placed in her mouth if requested to do so by speaking loudly close to the ear (right).

There was no motor paralysis attending or following this condition for she freely moved both arms and legs, and there was no disturbance of the facial expression, but the intellect was profoundly clouded.

April 4.—Spent a restless night, respiration moaning and sighing, with an occasional exclamation of "Oh dear," but no satisfactory response could be gotten to the inquiries as to the cause of her distress. Temperature 101, pulse 100.

April 5.—Slight improvement in the intellect but still unable to recognize those about her. Kept carrying her hands to her head and exclaiming "Oh my head," at frequent intervals. The distress in the head seemed to be constant and mainly over the left frontal region. She took nourishment when it was given to her but gave no sign of recognizing the need of it. Very restless, tossing herself about in the bed. Temperature and pulse the same as the day before.

April 6.—Some improvement; answers when spoken to but often irrelevantly. Complains of severe pain in frontal region. Temperature 100, pulse 94.

April 7.—Further return to consciousness; calls friends by name but with some hesitancy. Seemed to have no memory of what had happened and expressed surprise when told she had been sick; said if it were not for her headache she would be quite herself again. Headache constant and frontal; other symptoms remain unchanged.

April 8.—No change; still restless and severe headache.

April 9.—Headache less severe, mental conditions still further improved, more mental activity but attacked by hallucinations; able to recognize friends. Temperature and pulse normal. She was given a dose of castor oil which ordinarily was extremely disagreeable to her and swallowed it without remark. In health the taking of castor oil was a thing she declared she could not do. Afterwards when reference was made to it, she remarked that she must have been very sick if she took castor oil and did not complain of the taste.

April 10 and 11.—Headache less acute and constant; mind clearer; she called to mind events that had occurred and began to take interest in the household duties; still troubled with hallucinations, but they were of a pleasant type and she laughed when relating them.

At this time it was noticed that, although her mind had regained its activity, hearing on the left side was dull and confused; as she expressed it she "heard double."

April 12.—Began to sit up a little; headache not constant. Hallucinations of being away from home, out in company and having a good time.

April 13, 14, and 15.—Very little change except gradual improvement; less aberration of the mind. Sat up a good portion of the day.

April 16.—All pain in the head gone; mind clear and she felt quite like herself; got up and dressed and was about the house all of the day. Much pleased at the visits of her friends. Laughed and joked with them and they could not see but that she was quite well. She took her meals at the table with the family. With the exception that her hearing was imperfect especially upon the left side, and the taste remained blunted, there was at this time no evidence of sensory, of motor or mental disorder.

This marked improvement continued until April 22. She planned to resume her household duties and discharged all attendants and appeared quite like her natural self. No abnormality in mental action or in movements were observed by anybody about her.

April 22.—The attending physician was again summoned; found her complaining of much frontal headache. The temporal arteries were distended, but there was no abnormal action in the pupillary reflexes, nor was there any confusion of the mind. He was again summoned on the night of the 23d and found her unconscious, respiration slow, pulse feeble, pupils normally dilated. No marked spasm of any muscles. Cardiac and respiratory action soon improved and after a few hours she could be so far aroused as to be induced to take liquids and swallow them.

April 24.—Still comatose but could be aroused somewhat by loud talking. Temperature 101. Pulse 96; respiration 24.

April 25.—Condition unchanged except the coma was not so pronounced. She would often carry her hand to her head exclaiming, "Oh my head."

April 26.—Condition much the same, except at intervals she recognized members of the family about her.

April 27, 28 and 29.—Gradual improvement in the mental conditions, intellect sluggish and unable to fix her mind for any length of time upon any subject. Eyesight normal with the right eye but with the left unable to count fingers at a distance of twelve inches. Complained of much headache and some pain in the base of the brain; took abundant nourishment.

In the afternoon of April 30, the nurse discovered that the left side was paralyzed throughout, the facial muscles and the tongue being involved; she was unable to turn the left eye outward. Involuntary actions of the bowels and bladder.

May 1 and 2.—Remained the same; speech and swallowing imperfect. The patient was left handed.

May 3 and 4.—Improvement in speech and swallowing, and began to get voluntary control of the left arm and leg.

May 5.—Respiration normal; some voluntary control over the action of bowels and bladder regained. Still some disturbance of speech and deglutition and the face remained slightly drawn to the right. The tongue when protruded turned to the right, was red and clean. Vision much improved in left eye and right eye normal. Left eye can not be turned outward; mental action dull, but able to recognize friends. Thoughts disconnected and disjointed. She was able to sit up in bed for a few moments and to move from one side of the bed to the other.

May 6.—Continued to improve. Took nourishment readily. Strength in right arm and hand increased. She was able to grasp the hand of the nurse quite firmly. Eyes normal in appearance but the left still impaired in action of external rectus. Vision unchanged. The temperature on this and other days after April 30 did not exceed 99½. Speech was now quite distinct. Mind clear but inactive. Headache which had been light returned with great violence towards evening.

May 7.—Passed a restless night, manifesting more than her usual timidity. Clung closely to the nurse. Had several general convulsions in the morning from 8:30 to 9:30 during which the left eyelids were open and the pupil contracted. The pupil of the right eye was widely dilated, the lids closed. The headache seemed very severe as evidenced by her moaning and carrying her hands to her head after the convulsions ceased. Stupor followed the convulsive seizures and gradually deepened into coma, though consciousness was retained long after she was able to utter a sound. Hearing was not abolished up to within an hour or two of death for she would squeeze the nurse's hand in response to inquiries uttered in a loud tone; but she lay upon the bed in such a manner that she could not be approached only upon the right side, and hearing upon the left side was not tested during the last weeks of her illness.

NECROPSY.

Eighteen hours after death. Skull unusually thick. Dura mater congested and apparently thickened. Superior longitudinal sinus empty; veinous congestion of the pia mater; the arteries moderately full. No naked eye appearance of special abnormality about the frontal lobes, although the anterior cerebral arteries seemed somewhat more anemic than others. A clot of dark semi-coagulated blood about two inches in diameter occupied the right middle cornu, and the walls of this cornu were extensively disintegrated and readily gave way. The disintegrated tissue involved the anterior half of the hippocampus, the anterior extremity of the superior temporal and the anterior third of the middle and inferior temporal gyri. The gyrus hippocampus was largely undermined although its surface remained intact. The island of Reil was softened. Blood coagula, more or less firm and recent in formation, filled the lateral ventricles, the third ventricle and the infundibulum, and extended through the aqueduct of Sylvius into the fourth ventricle. No softening or disintegration had taken place

except in the right temporo-sphenoidal lobe. The time being limited other cavities of the body were not explored.

I need scarcely say to you who have been able to follow me in this hurried recount of bedside observations, that the revelations of the autopsy were something of a surprise to me. In the light of the discoveries then made I was compelled to admit to myself that I had, in constructing a theory of causation of the clinical phenomena observed, placed too much stress upon certain prominent symptoms. I saw the patient twice for about half an hour each time. On the first occasion, the suddenness of the onset of the symptoms; the mental confusion; the severity of the headache, which was frontal and left-sided; the impairment of vision of the left eye; the entire lack of motor and sensory abnormalities (for this was at a time when she was beginning to recover from the first attack) impressed me quite forcibly, and I was confident there was an arterial embolus obstructing the left anterior cerebral artery. The subsequent complete clearing up of the mental cloudiness and the subsidence of all other symptoms only confirmed me in this opinion. The only thing that was suggested to my mind that threw doubt upon this conclusion was how to account for the dullness in hearing in the left ear. But in the apparent harmony of the more prominent symptoms in accord with my theory, this did not seriously attract my attention. The perverted or impaired taste was not an observation of my own, but was a fact learned from inquiry of the attendants subsequent to the autopsy. The theory of embolism seeming to account for the symptoms following the first attack, the phenomena attending the second attack, which occurred after twenty days, and when many of the disturbances resulting from the first had subsided, presumably because of some degree of collateral circulation being established, were accounted for on the assumption that a thrombus had formed posterior to the embolus and its backward growth had, in all probability, crossed the anterior communicating artery and suddenly plugged the other anterior cerebral, as at this time, you will observe, there were no spasms, no paralysis, simply an obscuring of mental faculties which again largely cleared up within a few days.

The autopsy revealed that the original attack had been due to a hemorrhage, not very extensive, interior to and at the lower extremity of the right lateral cornu. Softening followed, involving the hippocampus major at its lower extremity, the anterior extremities of the superior middle and inferior temporal convolutions.

The hemorrhage from its location might have caused pressure on the optic commissure, especially its left side, together with interruption in the circulation through the anterior part of the circle of will in rendering the anterior cerebral arteries anemic. At the second attack the hemorrhage, still more extensive and far reaching, had extended into the lateral ventricles and the third, even passing into the infundibulum and distending it, causing pressure on the pituitary gland. The third attack, from which she never rallied, was attended by an escape of blood from the same source, but in addition to flooding the lateral and third ventricles it had passed through the aqueduct of Sylvius into the fourth ventricle.

I think we are justified in the assumption that as far as any symptoms observed in this case can be justly referred to the lesion in the right temporal lobe, they tend to show that its function is of the same nature for the left side of the body that Ferrier has found the left temporal lobe to be for the right, a cortex center for hearing and taste.

My experience in this case has impressed upon me more strongly than ever the necessity of a systematic and thorough examination in detail of all the sensory and motor tracts in every case of central lesion, and that according to a definite plan should, wherever circumstances permit be rigidly carried out, even through certain symptoms may seem to show that such extended investigation is superfluous.

DR. KIERNAN—As Dr. Herdman has indicated in the first part of his paper, it is well known that lesions of the right temporal lobe give fewer special symptoms than lesions in any other part of the brain. It is in some respects the almost latent region of the entire brain. Doubtless it has its functions. The doctor has suggested in his paper that the functions of the right temporal lobe are the same for the left side of the body as the left for the right, but the functions of the left temporal lobe, at least the principal part of the left temporal lobe, are largely for hearing, which is not a function for either the one or the other side of the body, and in many cases the left half or left side of the brain in certain functions, acts for both sides of the body. It is interesting, however, in this case, to note that the patient was left handed. Now, ordinarily, I have no doubt, that while the right third frontal convolution and the right upper temporal convolution and the temporal convolutions generally are comparatively latent, yet they are centers for these functions potentially, before the left side of the brain is developed. Here it would seem to me to be the reasonable explanation that probably both the right third frontal and the right upper temporal, in accordance with what we find in left-handed cases, had taken on the functions of the left side of the brain more largely than is usual. I have had several cases of lesion of the right temporal lobe. One of the most interesting cases that I have ever seen is recorded in my paper on cerebral localization, and it was also reported by Dr. H. C. Wood, whose case it was in fact. It was originally a case of tumor of the right temporal lobe. This tumor grew and radiated in various directions. Finally hemianopsia and other symptoms indicative of lesion of the occipital lobe were present, and then Dr. Wood in consultation with ophthalmologists and Dr. Agnew, decided on an operation, and the patient was trephined over the occipital lobe of the right side. The patient latterly had lateral hemianopsia. Dr. Agnew came down on really a radiation of this tumor, but doubtless that which produced the hemianopsia. The patient died; an autopsy was made. I saw the specimen which was an immense tumor involving the entire right temporal lobe, or very nearly so, and thence had grown backward into the occipital lobe. There was a record of observations of this patient for a long time which showed that this tumor had been in the lobe with some development for a long time, but the practical point about it was that the lobe usually, so far as we know, is latent in symptomatology and that both neurologists and surgeons should pay very strict attention to the possibility of symptoms indicative of occipital or other lesions being really the symptoms of the final development of a right temporal lesion. I had one other case which I have also reported; a glioma of the right temporal lobe, the patient dying from intercurrent hemorrhage.

Blank applications for membership in the ASSOCIATION, at the JOURNAL office.

LAWS OF GROWTH OF BACTERIA APPLIED TO ASEPTIC SURGERY.

Read before the Section of Military Surgery, Pan-American Medical Congress, September 7, 1893.

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It has been well said by a great operator that every surgical operation is a study in bacteriology. There will be found, we believe, at the present day very few surgeons who will gainsay the above statement, and yet it may be worth our while to examine the question whether our surgery, as practically carried out, is in perfect accordance with the laws of bacterial growth which are the underlying basis upon which aseptic surgery has been built. To return to elementary principles: let us inquire what are the three essential conditions favoring the growth of bacteria and other microörganisms? The answer, of course, that would be given by every tyro in surgery would be the well worn statement: heat, moisture and atmospheric air. In other words, the very same conditions which favor the growth of bacteria are precisely the same conditions that are essential to the growth and repair of all the tissues and organs of the human body.

The logical sequence of this results in the following statement, viz: That no treatment of the tissues or organs of the body involved in surgical operations can be successful, which seeks by the action of powerful chemical agents to destroy bacteria in and around wounds; for if powerful enough to accomplish that object, the tissues themselves must be destroyed or injured.

A surgical operation is to a certain extent the opprobrium of medicine, for in having recourse to it we thereby confess the failure of our science. The ideal surgical operation, therefore, is one that removes the diseased or injured portion of the body with as little disturbance of the normal conditions of the tissues as possible. Repair without inflammation is, as all know, the motto of modern surgery. How preposterously absurd, therefore, is it for us after having removed, let us say, a tumor or limb from the body, to douche the seat of the operation with solutions of mercurial chlorid or other powerful irritant, producing necrosis of the tissues and thus preventing the very end we seek to attain.

Notwithstanding the profound respect that all surgeons feel for the work and self-denying labors of Sir Joseph Lister, yet there can be no questioning the fact that the theory and practice of antiseptic surgery are rapidly being abandoned, and the more perfect science and art of aseptic surgery are being substituted in its stead.

To. Prof. Lister we owe the grand idea of excluding the bacteria and other germs from wounds, thus creating the new science of antiseptic surgery. It is perfectly true that aseptic surgery, as now practiced in this country and in Europe, is very different from, and far superior to, the cumbrous procedures and dressings devised and practiced by the father of antiseptic surgery. The carbolic spray, once universally applied, has been almost entirely abandoned, and during my recent visit to Europe I never saw it once used. The many layers of protective gauze, mackintosh, etc., are now replaced by a simple layer of iodoform gauze, with an abundant layer of aseptic cotton firmly retained by bandages.

Another remarkable change is the growing disbelief in the efficacy of the ordinary antiseptic solutions when used as germicides. A solution of carbolic acid has been shown to be a weak germicide, and the same may be said of a solution of boric acid and of the other solutions used commonly for this purpose. Mercuric chlorid has until the present time been our sheet anchor as a germicide. As we lost our faith in one germicide after another, we thought we could rely on that. Yet the iconoclasts are busy in their work of tearing down all idols in medicine, and now they have not left us this one. Recent investigations carried on at Johns Hopkins University (published in the Johns Hopkins *Hospital Bulletin* of April, 1891, pp. 50–60), by Dr. A. C. Abbott, on "Corrosive Sublimate as a Disinfectant against Staphylococcus Pyogenes Aureus," on page 59, at the close of a very elaborate series of investigations on this subject, he says: "It is seen that under the most favorable conditions, a given quantity of corrosive sublimate has the property of rendering inert only a given certain number of individual organisms." Ibid, page 60, he summarizes his results in the following words: "In the light of these experiments and those of the experimenters quoted in this paper, it is plain that for use in surgical practice, the solutions of corrosive sublimate do not possess all of the advantages hitherto attributed to them. To the employment of the sublimate solutions upon wounded surfaces it is plain there exist at least two serious objections: First, the albumen of the tissues and fluids of the body tends to diminish the strength of, or indeed renders entirely inert, the solution employed; and second, the integrity of the tissues is materially injured by solutions of this salt."

Investigations made at the University of Michigan (published in the *Medical News* of October 1 and 8, 1892), have shown that solutions of mercuric chlorid when used as a germicide are often inert, and still oftener actually injurious to the tissues, when applied during surgical operations.

Dr. Charles T. McClintock gives in the above paper (*Medical News*, October 8, 1892, p. 399), the following summary of his experiments, viz:

"1. The high rank heretofore given to corrosive sublimate as a germicide is without warrant and was based on faulty experiments.

"2. The very varying power of resistance in different cultures, as pointed out by Esmarch and insisted on by Gruber, is an all important factor to be noted in determining the germicidal power of any agent.

"3. That sublimate forms with cellulose, as cloth, filter paper, etc.; with silk, with albuminous bodies, with some part of bacteria (probably the envelope), a chemical compound that can not be removed by any amount of washing with water.

"Thus the sublimate, when acting upon a germ, forms a capsule around it that protects the germ for the time from the further action of the sublimate, and in turn forms an impenetrable barrier to the growth of the organism unless it be removed. This barrier may be removed with salines, and is more rapidly removed in proportion to the renewal of the salines; conditions that are fulfilled in the circulating blood.

"The above named experiments would seem to warrant the expression of the opinion, that the use of solutions of corrosive sublimate in surgical operations should be limited to the cleansing of the sur-

face of the part to be operated on, and to the disinfection of the hands and arms of the surgeon; and furthermore, that such solutions should never be applied to surfaces denuded of epithelium, or cut surfaces of the body made during surgical operations."

Antiseptic surgery endeavors to destroy the microorganisms in and around the wound, and thus prevent their development. How futile this effort must be, when we consider that these organisms are everywhere and at all times present with us. They are in every breath we draw, in much of the water and in many of the articles of food that we consume; and indeed, exist always in the alimentary canal and all parts of the body exposed to the air. But on the other hand, it must be remembered that there are bacteria and bacteria. There are some species of bacteria which, when planted in a wound, will bring forth as the result of the poisonous materials formed by them, the formation of pus with the resulting septic fever, as certainly as the acorn when planted and nourished will develop into the sturdy oak. There are other species which when they come in contact with a wound are practically harmless. Of course we can not with the naked eye distinguish between the poisonous bacteria and the harmless ones, and hence our only safe plan is to as far as possible exclude them altogether from wounds, whether made by violence, or those made during surgical operations. How, then, can this be done? The first point to be observed is, to use as little water or watery antiseptic solutions as possible in contact with the wounds made during surgical operations. The reason for this course is that by so doing we remove one of the essential conditions necessary for the development of bacteria, and thus prevent or at least hinder their growth.

It is practically impossible to diminish or prevent the growth of bacteria in a wound, by either raising or lowering the temperature of the wounded parts; hence we can only endeavor to accomplish this object by making use of the other two methods of limiting bacterial growth, viz: to keep all wounded surfaces as dry as possible, and exclude them from the action of the atmospheric poisonous germs during the process of repair.

Simple and self obvious as these principles of treatment may appear to be, yet they are largely neglected and ignored by very many surgical operators at this very time. Often during an operation performed even by a most eminent surgeon (let us say an amputation), we see the field of operation deluged with a solution of boric acid, a solution of carbolic acid, or worse still a solution of mercuric chloride. This seems to be radically wrong in practice and entirely inconsistent with the elementary principles of aseptic surgery. Of course, in operations which require the opening or removal of large suppurating cysts or cavities, it is necessary to wash them out. This should be done, we believe, with fluids as near the composition of blood serum as possible. That wonderful operator, Lawson Tait of Birmingham, England, who has nearly completed his third thousand of operations upon the abdominal cavity, uses no fluid to wash out the abdominal cavity during his operations, excepting recently boiled water.

For use in surgical operations the following fluids only are necessary, viz: recently boiled water used tepid (about the temperature of 100 F.) and normal salt solution (0.75 per 1000 easily made by dissolving one ounce, avordupois, of common salt in a gallon of boiling water).

Aseptic surgery therefore, after all is nothing but cleanliness, but when we say that, we mean cleanliness carried to a microscopic degree of perfection, and far surpassing the ordinary ablutions by soap and water. What we endeavor to do at the present time, before any surgical operation, is to so thoroughly cleanse the patient, the surgeons, assistants, nurses, surgical appliances and dressings (of course including the hospital and all its surroundings) so that no germs of poisonous bacteria can infect the wound, and cause suppurating fever, and perhaps the death of the patient operated upon. Modern surgery starts out with the assumption that in an operation aseptically performed upon an aseptic patient, and by an aseptic operator, there should be neither suppuration nor fever following any surgical operation. This of course is the ideal of surgery, which can not always be realized, but nevertheless it is the goal towards which we should aim, and which we should always endeavor to attain.

Every instrument and surgical appliance must be sterilized shortly before the operation, either by boiling in water containing 1 per cent of carbonate of soda (commonly called washing soda) half an ounce to three pints of water, or by being exposed to a dry heat above the temperature of boiling water (from 230 to 240 degrees Fah.) for one-half hour before the operation.

This can be done in the various patterns of steam and dry sterilizers which are now on the market, and can be procured at a moderate cost. But my principal object in writing this article is to call attention to the fact that aseptic surgery can be practically carried out without the purchase of any apparatus whatever. A tin wash boiler, which can be found in the humblest home is just as good for sterilizing surgical instruments as Arnold's, or other of the steam sterilizers now in use. A still more simple sterilizer for small instruments is the ordinary oblong tin baking pan, so familiar to our eyes in our youthful days. This pan when filled with boiling solution of carbonate of soda, may not look quite so ornamental as a porcelain evaporating dish, or a forty dollar copper sterilizer, but it will do just as good work. As before mentioned, to the above must be added absolute cleanliness of the operator, assistants, nurses, and in fact of all who come in contact with the patient. It is scarcely necessary here to say that the part operated upon, and the arms of the operator, assistants and nurses must be thoroughly scrubbed first with soap and water, and then with solution of one to 2000 mercuric chlorid, just before the operation.

One incidental and very great advantage in operating in private houses, providing they are clean and in good sanitary condition, is that the germs of poisonous bacteria are for obvious reasons not so liable to be found there as in the air of crowded hospitals. In regard to the sterilization by the dry method, the only thing that is absolutely necessary to be purchased is a good thermometer, graduated to a temperature of 300 degrees Fah. Of course it is convenient, and perhaps more surgical looking to buy a dry sterilizing apparatus, but it is by no means essential. The oven of a kitchen range or that of an ordinary cooking stove will answer every purpose. Take a common pasteboard box, such as letter

envelopes are packed in, place in the bottom of it a layer of aseptic cotton about two inches in thickness, lay on this your instruments and surgical appliances (bandages, etc.) with your thermometer, and your apparatus will then be complete. Place in the oven and expose to a temperature of 230 to 240 degrees Fah. This temperature can be easily regulated by a little practice, and is lower than the temperature required for ordinary baking purposes, which is said to be 270 degrees Fah. Finally, allow me to add the following maxims: 1. Never use a drainage tube in a wound unless you are absolutely certain you can get union by first intention. 2. If you have an amputation to perform, ligate every vessel requiring it with aseptic catgut, silkworm gut or silk; cut the ligatures off close to the vessels and leave them in the stump, close the flaps with similar sutures, and use no adhesive plasters in contact with the flaps of the stump. After you have stitched up the flaps, dust their surfaces with iodoform, boric acid, or subnitrate of bismuth. Place over this a layer of iodoform gauze, then an abundant layer of aseptic cotton, and over all this two layers at least of a well-fitting bandage. The reason why I do not use adhesive plaster in contact with the flaps of the stump, is that it can not be properly sterilized, and is very often the means of infecting the stump.

Above all things, never open a stump for ten or twelve or even fifteen days after an amputation, if the temperature of the patient is at normal point, or even a degree above. The last limb I amputated was dressed for the first time on the sixteenth day after the operation. On the other hand, if the temperature goes up to 102 or 103 degrees, open up the stump at once, and find out the cause of the trouble In Bichât Hospital (located in Paris, France), I saw a number of stumps of amputation in the summer of 1892 which had only received two dressings, one on the fifteenth day; and the other final dressing on the twenty-eighth day after the operation.

ADDRESS.

CHAIRMAN'S INTRODUCTORY ADDRESS.

Read before the Section on Ophthalmologyat the Forty-fourth Annual Meeting of the American Medical Association.

BY S. D. RISLEY, M.D.

PHILADELPHIA, PA.

I can not refrain from expressing my high appreciation of the honor you have conferred in calling me to preside over the deliberations of the section. Permit me to extend my most cordial greetings and to express the personal gratification I feel in again meeting my colleagues in ophthalmology from all sections of our country. It is fitting that I should congratulate the section that its members have again been spared through the toil and vicissitudes of a year and are still actively engaged and deeply interested in this beneficent work. The activity displayed everywhere as set forth in a rapidly growing special literature is encouraging, not to say inspiring. Not only are periodicals devoted to ophthalmology multiplying, but the character of the papers published are rapidly improving. Careful scientific work is obviously on the increase and the clinical papers also portray a class of work far superior to that of only ten years ago. To me this has been a source of great encouragement and to us all just cause for congratulation. There can be no question as to the large share the members of this section of the American Medical Association have had in this advance. It is my ambition to see it assume the rôle of authority in our special work in the United States, so that its utterances shall be regarded as the expression of the latest and best opinions. In uttering this sentiment I am sure that I but voice the feeling of every member of the section. If this ambition is to be realized, however, to any higher degree than in the past, it must be through the unselfish devotion of every member, not only in his everyday individual work in laboratory and library, clinic and consulting room, but devotion also to the interest of the section. While I have no doubt this feeling of devotion has been entertained by every member, our methods of section work have not afforded adequate means for its expression. The fault, if any, has been in a lack of careful organization. There has been no lack of material; indeed, we have been overwhelmed with the abundance presented for consideration and discussion, but we have been too prone to content ourselves with the simple recording of the facts of our experience. Paper after paper has been presented, manifesting the most painstaking and interesting observation of unusual experiences. Some discussion has followed or similar experiences have been doubtfully reported from memory, thus adding to the richness of material, but in the end much loss has been sustained, both from want of time for adequate discussion and from the want of classification of reported facts. I fear I shall take too much of your valuable time by attempting to present this in all its bearings, so content myself with the statement that our design should be, first of all the presentation of the carefully prepared papers, and for this the greatest latitude should be accorded. To adopt any method which would hamper this feature of our work would, I am sure, be a great mistake. But in order to secure the highest usefulness it would be of great service if each member should study the list of expected papers and prepare for the discussion by reviewing his own experience in the same direction. By this means we would secure a consensus of opinion and the section speak as a body in its transactions, instead of presenting simply collections of individual views as expressed in the published papers. In the second place, special provision should be made for the elaborate study of some special topic or some form of disease which has baffled our skill or about which there is diversity of views as to nature and treatment. For this purpose I would suggest that at each annual meeting a commission should be appointed for the investigation of some selected subject, to report at the following annual meeting. By way of illustration, who of us would not like to have the report of such a commission, e. g., hemorrhagic glaucoma or retro-bulbar neuritis, or the pathogenesis of the myopic eye, or the nuclear palsies of the ocular muscles, or the anomalies of ocular balance. Then a carefully organized discussion of the report of the commission would secure a valuable review of the subject and the consensus of opinion of the section, which would find place in special literature, be widely quoted and the reputation of the section and of American ophthalmology be greatly increased. Such studies would render the sessions of the section so valuable that

none of us could afford to miss its annual meeting and thus the prosperity of the section would be generally enhanced. In the publication of our special bound volume I would suggest that the discussion should also be included so that any unusual views presented by the author of a paper should stand in juxtaposition to the expressed views of his colleagues.

PANNUS AND ITS TREATMENT BY THE DIGESTIVE FERMENTS.

Read in the Section of Ophthalmology, at the Forty-fourth Annual Meeting of the American Medical Association.

BY JAS. A. LYDSTON, M. D., Ph. G.

Formerly Professor of Inorganic and Medical Chemistry and Lecturer on Diseases of the Eye and Ear, Chicago College of Physicians and Surgeons, Chicago, Ill.

The etiology and course of pannus are so fully appreciated that it will not be necessary to consume valuable time by entering into a lengthy description of the disease; suffice it to say for the purposes of my paper that inasmuch as pannus is one of the most frequent sequelæ of trachoma I shall limit my remarks to the so-called granular pannus; that is, that form in which the formation of granular masses in the corneal layers has caused infiltration and vascularity of the corneal surface.

In this type, the morbid changes first begin to assert themselves in the upper margin of the cornea at the limbus conjunctivæ and we note further that its tendency to clear is in direct proportion to the degree and duration of the inflammatory process; in other words, the further the process departs from the character of a simple infiltration throughout the more ominous will be the prognosis and, indeed, in the light of our present knowledge bearing on this subject we know that complete reparation after pannus which implicates the deeper corneal layers is a forlorn hope; but in all cases in which the cell migration which constitutes the infiltration in pannus is confined to the corneal region lying between the anterior elastic lamina or Bowman's membrane and the corneal epithelium there is an intrinsic tendency to clear. In proportion, however, to the increased aggregation of cells, Bowman's membrane undergoes atrophic changes and finally is obliterated, thus permitting the process to extend more deeply. From a histological standpoint, pannus proves to be a layer of newly formed, soft, cellular tissue greatly simulating in appearance the infiltrated trachomatous conjunctiva. This tissue is more or less vascular and occurs in more or less typical layers imparting an uneven nodular aspect to the growth. Special terms have been assigned to the disease which are to a certain extent descriptive of pannus in the several types; thus we have pannus tenuis, which indicates a recent pannus exhibiting no great thickening; again, pannus vasculosus, signifies the vascular type, and pannus crassus or carnosus implies a very dense pannus; still further, we have pannus sarcomatosus, which is an unfortunate term, inasmuch as it generates confusion with neoplasms; finally, we have pannus siccus which is mostly composed of connective tissues, there being few or no blood vessels.

In the management of this class of cases the preeminent notion heretofore has been to cure the conjunctival affection from which the disease takes its departure, it being held that the pannus will spontaneously disappear; with this object in view various therapeutical measures have been resorted, to such as are usually exhibited in the treatment of trachoma; for example, nitrate of silver in solution or substance, sulphate of copper in solution or in the form of "blue stick" as it is called, and the various antiseptic measures have all found fitting application, and even the more radical measure of inoculation, either with the pus of an acute blennorrhea as advised by Piringer and Jaeger, or the milder method of jequirity treatment first advocated by De Wecker. In conjunction with the foregoing ponderous array from the therapeutical armamentarium the surgical procedures of syndectomy, iridectomy and sclerotomy, and even an attempt at radical removal of the growth by scraping as advised by Grüening have all been utilized in these cases, and notwithstanding the great mass of literature that has accumulated in the course of time, we are still far from a unity of views with respect to the treatment of pannus. Within the last year I resorted to a mode of treatment which was particularly pleasing to me in its results and I herewith present an outline of the course adopted, not with any idea that it will wholly supplant the foregoing measures, but if it proves as efficient in the hands of others as in my own, that it may become an advantageous auxiliary in the management of such cases. I refer to the treatment of pannus, particularly that type characteristic of trachoma by the digestive ferments. The first case in which I employed a digestive ferment was in that of a man aged 45 who had suffered with trachoma and its ravages for a period of eight years. Papillary hypertrophy and trachomatous granules were still quite noticeable, together with very perceptible atrophy of the conjunctiva tarsi and a very pronounced pannused condition of both corneæ, which rendered it impossible for the patient to get about unattended. Entropion had also supervened. Viewing pannus as a new growth more or less vascular in type, I surmised that if I could but bring a medicament in contact with it that possessed powerful digestive properties I could favor its removal, and with this object in view I resorted to daily inspersions of powdered papoid with boric acid. Papoid is the new proteolytic agent derived from the carica papaya or papaw plant, and bids fair to become a most valuable addition to our materia medica. This agent exhibits the power of digesting all types of proteid and albuminous substances, both in a coagulated and uncoagulated form, and its digestive properties are still further enhanced by the fact that it acts in acid, alkalin and neutral media, though, as my experience demonstrates, more pronounced in alkalin solution. So true did this medicament maintain its digestive powers that the remaining trachomatous granules gradually disappeared, and the pannus began to thin perceptibly; finally, after a course of constant medication with the before mentioned medicament, extending over a period of three months, such a marked change had transpired that the patient was able to get about unattended, and with the application of suitable glasses can read ordinary newspaper type at the distance of twelve inches and Snellen's D-18 at eighteen feet. When the process of clearing had reached its maximum degree the admirable operation designed by Dr. Hotz was instituted for the removal of the entropion, and thus the lids were placed more nearly in normal

apposition to the eyes, and the gentleman to-day rejoices in a very fair amount of vision in spite of many gloomy predictions to the contrary. The second case was that of a woman aged 30, who was suffering with chronic granulations and a pannused state of both corneæ, though the pannus was not quite so dense as in the preceding case. Here the same favorable results ensued, the granulations gradually absorbing, the hypertrophic papillæ disappearing and the pannus progressively diminishing in density until a fair amount of vision was restored to an individual who had abandoned all hope of ultimate recovery. The granulations melted away like a piece of ice in full sunlight and apparently had no tendency to reappear. A third case in which I applied the remedy is that of a woman aged 35, who had sustained a siege of trachoma affecting both eyes with consequent pannus of the vascular type, and in this case as in the preceding, a diminution of all the inflammatory symptoms ensued together with pronounced thinning of the pannus, and perceptible clearing of the corneæ with great improvement of vision, and I am convinced by the foregoing cases that we have in the digestive ferments, particularly papoid, a very efficient and safe digestant applicable in these cases.

The argument will no doubt be advanced that it is not possible to digest living animal membrane to a degree sufficient to warrant the application of the remedy in such cases, but in opposition thereto, I hold that the new growth is necessarily of low vitality, depending as it does for its nutritive pabulum upon the conjunctival and embryonic vessels peculiar to itself, and is largely composed of lymphoid structures which have appeared to be particularly susceptible to the digestive influence of the ferment. In order to demonstrate its powerful digestive qualities I immersed a densely leucomatous eye which had been blinded by smallpox and recently enucleated and present it herewith for your inspection. You will notice that it is almost completely digested. It is now one week since the eye was thus treated, the strength of the solution being 30 grains to the ounce, and indeed it had reached its present state of digestion on the second day of its immersion which indicates that papoid exhibits powerful digestive qualities when brought in contact with animal membrane, and certainly if it is capable of virtually digesting the cicatrized envelope of an eye, which as we know even in a normal condition is quite resistant to the action of chemical agents generally, its effect in this instance is strikingly suggestive, and leads to the conclusion that its digestive properties have not been over estimated. In an article entitled, "Some Observations on the Clinical Uses of Papoid," by Dr. Arch Dixon of Kentucky, he states that "he has used papoid with marked benefit in diphtheria, membranous croup and indolent ulcers, and as a solvent for dead bone." My own experience while still limited, leads me to confirm his conclusions when he says, "that papoid under papoid conditions produces greater results than pepsin under pepsin conditions." I have made application of pepsin, both in solution and in powdered form in cases of granular conjunctivitis associated with pannus, and have not reached the satisfactory results that I was able to obtain with papoid.

DR. TAYLOR—In what proportion is papoid and boric acid used, and how often is the application made?

DR. LYDSTON—I apply the remedy twice a day in the treatment of pannus, the patient being willing to come to my office that often; otherwise I apply it only once a day. I use equal parts of papoid and boric acid.

DR. DE SCHWEINITZ—In what strength do you use the remedy, how do you apply it and what is the reaction?

DR. LYDSTON—I take equal parts of papoid and boric acid; after mixing them thoroughly I dust the mixture on the cornea by means of a camel's hair brush; only a slight reaction following.

SELECTIONS.

Pathological Models at the World's Fair.

In order to draw attention to some of the exhibits from the Pathological Institute of Berlin University, now on exhibition at the World's Fair, we reprint herewith DR. BERLINER'S account of these from an article originally published in the *Deutsche Med. Wochenschrift*:

"Plastic Reproductions of Preparations from Pathological Anatomy, by DR. PAUL BERLINER, Berlin, Germany. In any demonstrative science, clinical instruction is of the greatest importance, therefore every teacher of medicine, whenever possible, endeavors in his lectures to help his hearers to an easy comprehension of his subjects, either by exhibition of a patient, of pathological preparations and instruments, or corresponding illustrations of the same. For this reason, also, medical literature contains abundant illustrations, for the production of which all forms of graphical methods are brought into use. However, notwithstanding the perfection of photographical, chromographical and similar illustrations, medical science often presents to the student cases in which the mere physical aspect, or gross anatomy, is insufficient, and a plastic representation is necessary for a clear understanding thereof. This is especially true when applying to dermatology, embryology, or normal and pathological anatomy. If, therefore, from the plastic reproduction (or representation) the model is perfected by careful coloring copied from the original, it should certainly be the most complete way of permanently presenting those natural objects which are themselves rapidly perishable, and retaining the peculiarities of their changeable, or temporary appearances and conditions. The combination of "polychromy" with plastic art makes it possible to produce objects wonderfully similar to the fresh, natural preparation.

The idea of perfecting plastic preparations is not a new one. (At first it was confined to only normal anatomy and later pathological anatomy.) Preparations were formed out of various materials chiefly wax, and brought together in collections.

In literature, only isolated notices are occasionally found of such collections, which I have gathered together as far as possible without attempting completeness.

Hyrtl, in the preface to his "Anatomy of the Human Body," states that Emperor Joseph II, had presented to the school of military surgeons in Vienna (now extinct) the then world-renowned collection of anatomical wax preparations, equaled only by a similar one in Florence. Both collections were made under Fontana's direction by the Italian artist Gaetano Zumbo, and the Spaniard "Novesis."

The anatomical museum in Vienna contains a few wax models made by Dr. Dom Bastler, a practicing physician of that city in the earlier part of this century. At the present time these anatomical wax preparations are made princi-

pally in Paris and Lille, from whence they are exported all over the continent. Most of that class of models exhibited in Germany, particularly those of a pathological character, are of French origin. Most famous in Paris, is the Musè Baretta in the Hospital St. Louis, as is also the syphilographic collection of "Jumelin."

Among other manufacturers should be mentioned "Tramond" of the medical faculty of Paris University. He has published a voluminous catalogue of his preparations.

The department of Pathological Anatomy of the Berlin Charité, possesses a collection of models which were made by Dr. Felix Thibert of the Paris University.

Prof. Schüller, in a recently published account of his travels, states that most of the North American Universities also make use of wax models in their didactic and clinical lectures, and Prof. Schüller informs me these have also been imported from Paris.

In Germany, models of normal anatomy are manufactured in Munich and Dresden, and a Dr. A. Ziegler of Freiberg, furnishes preparations for the study of embryology.

Herr Lassae of Berlin, has directed his attention to the plastic reproduction of skin diseases, and has laid the foundation for a large collection of dermatological wax models which are reproduced from material furnished by his clinics.

As for myself, I at first made plastic preparations from only the skin clinics of the Breslau University, but soon made use of them in other departments of pathology, especially from diseases peculiar to the viscera. I believe I can claim the right of priority in the introduction of the last named preparations. My intention is to introduce this method of reproduction more generally by such preparations, and I believe it is deserving of more attention from the medical profession than has heretofore been accorded it. The practical advantages of these preparations from whatever medical specialty they be taken, is that while in possession of these artificial reproductions one has always at hand an exact imitation as to size and coloring of the original, and can make use of them while teaching, either for demonstration or comparison with other preparations. Herein lies also the advantage of this method of illustration over the use of the originals, which being preserved in fluids are subject to constant change in form and coloring. Also the rapidly changing appearances on the living subject afford only a more or less unsatisfactory objective picture of the disease in question, and therefore with the model we possess a permanent reproduction or appearance of the different morbid conditions and are not obliged to depend on memory, or the individual conception of a single observer.

There are important manifestations of certain diseases which the medical man during his student years finds no opportunity to become familiar with, perhaps because of the lack of clinical material or because during his course of clinical study these diseases were not prevalent at the time, but nevertheless diseases which every physician must be familiar with; as for instance the exanthema of typhus, etc. In such cases a model perfectly true to nature may well serve for instruction and demonstration, in default of clinical material. Among the various departments of medicine in which these plastic preparations are serviceable besides dermatology, is normal and pathological anatomy, and all the different newer methods of surgical operation, which can be well demonstrated on the plastic models. Also certain conditions and appearances which are to be clinically observed on the patient resulting from the treatment in hand, can be permanently fixed and reproduced by this plastic method. I have thus illustrated by these models in the skin clinics of the University of Breslau, the continuous manifestations of lupus affections which took place under the tuberculin treatment of Koch. This should clearly demonstrate the value of these plastic preparations, for now that the above treatment has been abandoned, they offer for present and future consideration a vivid conception of those therapeutic measures which caused so much excitement in the medical world. On the other hand, they will serve as objects for comparison and demonstration in case of renewal, improvement or adoption of another method of treatment.

During epidemics, pathological changes in single organs, which differ according to the virulence of the poison, can be obtained and preserved in the same manner.

These preparations are made by first taking a plaster cast of the subject to be reproduced. This mold is then filled with wax made liquid in a water bath, and a positive is thus produced. The model is then carefully painted with oil colors, true to nature. Later, various varnishes are applied to give to it the moist appearance of the fresh or living tissue, and upon the correct imitation of which it depends.

The most difficult part of the work is the correct coloring, and this is especially true in pathological more than in dermatological preparations. In skin diseases the lesions are generally more scattered and better defined, while in pathological subjects the whole surface must be correctly reproduced in its natural coloring.

Among the preparations exhibited by Dr. Berliner are mentioned the following:

1. Rectum, showing syphilitic changes of the mucous membrane. Five cm. from the anus a scar contraction. On the anus itself, a large hemorrhoidal tumor. Further, a rectal ulcer after cauterization with the Paquelin cautery, showing where healing had commenced. Slight edematous swelling and pigmentation of the mucous membrane. The submucosa and muscular coats are plainly shown in the drawing.
2. Kidney of newborn infant, with uric acid infarcts (lues congenita).
3. Aorta—endarteritis deformans (with atheromatous degeneration). Chronic enlargement (or dilatation) of the aorta.
4. Stomach, with gastritis proliferans, showing scattered spots or areas of hyperemia on the mucous membrane.
5. Stomach with secondary carcinoma of mucous membrane (metastatic).
6. Liver—Chronic interstitial hepatitis, with jaundice (cirrhotic).
7. Lungs, with emphysema, collapsed after opening chest cavity. Broncho-pneumonic hepatization in lower lobes.
8. Lungs, showing active hyperemia.
9. Section of lung with multiple cheesy deposits (pneumonic). Bronchial and peri-bronchial inflammation.
10. Section of lung, showing recent pleurisy. Excessive thickening of the pleura.
11. Larynx, with polypus on under half of right vocal cord.
12. Larynx, with syphilitic ulceration of the epiglottis.
13. Larynx with tubercular changes.
14. Puerperal uterus, with septic infection.
15. Thrombus of right femoral vein.

NOTE.—Nos. 1 and 2 are at present in the possession of Herr G. Lewin, director of the skin clinic of the Royal Charité.

Nos. 11, 12 and 13 are in the possession of Herr Prof. Dr. Fränkel, director of the clinic for throat diseases of Royal Charité Hospital.

Memorandum of a Case of Hydatids of the Kidney, with some Remarks.—By JOHN B. HAMILTON, M. D., LL. D., Chicago, Ill. Professor of principles of surgery and clinical surgery in Rush Medical College.

In January, of this year, a young Dane came into my clinic as a patient, complaining of occasional attacks of renal colic. On inquiry he stated that he had noticed after these attacks, certain white substances which his imperfect knowledge of English prevented him from describing. I directed him to return when he was next attacked by colic, and enter the hospital.

About the first of February he returned and I was enabled to see the substances passed with the urine, and I found them to be capsules of ecchinococci. Careful examination was then made by abdominal palpation and the kidney was found enlarged to a considerable degree. The patient's general condition did not seem to be affected, and his sole annoying symptom was the recurrent attacks of renal colic.

Examination of the urinary deposit under the microscope showed the hooklets of the ecchinococci in limited numbers, and on February 4, 1893, at the Rush Medical College

clinic, I cut down upon the kidney by lumbar incision made parallel with last rib. The kidney was exposed and the perinephritic space packed with iodoform gauze, and an incision made directly through the kidney toward the pelvis. The fluid contents of the cyst escaped through the wound, and daughter cysts round, white and shining, rolled out of the incision in great numbers. Irrigation was then practiced, and the parent cyst having been entirely emptied of its contents was flushed with iodin water, and the wound was packed to the bottom with iodoform gauze. The patient was comfortable after the operation, progressed toward a rapid convalescence and was well in four weeks.

Although hydatids of the liver are comparatively common, those of the kidney are infrequent, and it is on account of this circumstance that I venture to present this brief case report. There is now little dispute concerning the treatment of ecchinococci of the kidney, when a diagnosis is made; free incision is obviously the only correct procedure, but there is yet much to learn concerning the etiology and mechanism. The dog, wolf and kangaroo have the general reputation of being the original host of these ecchinococci. Their habitat is in the small intestine of those animals. There is circumstantial evidence to corroborate this reputation in the fact that it is precisely in those countries where dogs and the animals named are more common that the ecchinococcus disease is most prevalent. Iceland and Australia have the preëminence in frequency. Cobbold states that in Iceland one-sixth of the mortality is caused by hydatid disease.

Thomas published statistics of 7,156 cases of ecchinococcus disease observed in the hospitals of Australia. He found 59.66 per cent. located on the liver; 16.44 per cent. located in the lungs; 2.55 per cent. located in the epiploon and peritoneum, and 1.90 per cent. located in the muscles. Thomas, in 307 cases, found only two located in the kidney, but in Davaine it is stated that of 566 cases of ecchinococcus disease, thirty had their seat in the kidney. One fact is noted in regard to hydatids of the kidney which seems to have no reasonable explanation; that is the greater frequency of the disease in the left than in the right kidney. I am not prepared to offer even an hypothesis as to this fact which has been noted by all systematic writers on the subject.

The allegation that the disease is more frequent in women than men might have an explanation in their greater fondness for pets, and the habit of kissing them.

The statistics of ages of persons known to be affected by hydatid disease, vary from six years to sixty-five years, but the average is between twenty and thirty years.

The practical lesson from these cases is that the disease is preventable, and appropriate hygienic measures should be adopted by those engaged in the slaughter of animals. These measures consist in the care to be taken that no cystic tumors shall be allowed to go with the other offal, but be burned in a crematory, and by persons handling dogs that they do not kiss them, or allow the dog to lick the face. My patient admitted that he had eaten raw meat, and kept several dogs, from either of which sources he might have obtained the ova of the cestoid.—*Kansas City Medical Index.*

Calomel as a Topical Application to Hemorrhoids.—Dr. J. B. James has written in favor of the above treatment, in *British Medical Journal.* He states that he has for several years made use of calomel as a topical application to piles. His success has been quite marked, especially in cases where inflammation has been produced in the abnormal tissues, characterized by mucous discharge and hemorrhage. Under this simple treatment the annoying symptoms were generally soon relieved, and the patient absolved from the necessity of undergoing a perturbating course of treatment. This method leads to the frequent ablution of the parts, and cleanliness is of itself curative in not a few instances. The calomel is a cleanly kind of application, and commends itself to the patient for frequent and regular application. It is readily applied and does not stain the clothing.

SOCIETY NEWS.

American Dermatological Association.

Abstract of the Proceedings of the Seventeenth Annual Meeting, held in Milwaukee, Wisconsin, September 5 and 6, 1893.

(*Continued from page 506.*)

Dr. E. B. Bronson of New York, followed with a paper entitled:

THE TREATMENT OF PRURITUS.

The author said in the management of *pruritus essentialis*, as of any other disease, the first consideration should be directed to what caused the trouble. The adoption of measures tending to remove any accidental conditions or influences through which pruritus might be occasioned is important. Such causes include, besides various local sources of irritation, certain remote or general diseases and furnish the *indicatio causalis* in its more limited sense. This, however, states the scope of the problem only partially. What is of more importance is to establish principles of treatment fitted to those more special and more essential causes that constitute the necessary conditions of the disease and whence we derive the *indicatio morbi*. These causes are traced under etiology, and it is they which must afford the only intelligent basis for the therapeutics of pruritus.

The chief underlying condition in pruritus is hyperæsthesia, whether in its common significance of an excessive irritability of the sensory nerves, or in the sense of an excess or engorgement of sensation. The prime indications, then, are to allay irritability and to divert or annul the excess of nervous excitement. Measures to remove local excitants include, first of all, such as directly tend to prevent scratching. To admonish the patient to refrain from this is usually of little avail. Restraint may be possible during waking hours, but at night, when the trouble is always at its worst, and especially during the state of somnolence midway between sleeping and waking, no power can prevent it. It can only be avoided by first mitigating the lesion through the aid of anti-pruritics. Sedatives when used internally are apt to be disappointing. The degree of general sedation that is required to affect the nerves of the skin in so intense a disturbance as pruritus often is, affords a sufficient reason why this method of treatment is usually objectionable. Further than this, the depressing and atonic after effect on the nervous system tends to exaggerate the general hyperesthesia which is already essentially an atonic condition, and thereby increases the tendency to itching. Especially objectionable are most of the narcotics. The bromids, on the other hand, are often indispensable and may be required in liberal doses. It is important to avoid the enervating effects of loss of sleep, and for this purpose sulphonal or some other hypnotic is occasionally needed. In connection with this, two internal remedies which have been recommended by Bulkley are worthy of mention, and they are cannabis indica and gelsemium. The former is known to be a cutaneous anesthetic as well as an analgesic, and by virtue of the former quality should be useful in pruritus.

Carbolic acid is the most reliable and most generally useful anti-pruritic which dermatologists possess. It was well named by Unna "the opium of the skin."

The following "anti-pruritic oil" has been much employed by the author for years, both in local and so-called universal forms of the disease, with no more untoward results than now and then a trifling dermatitis, when through oversight the patient has been allowed to make the applications too frequently, or has continued them too long. The formula is:

℞. Carbolic acid, ʒi–ii.
Liquor potass., ʒi.
Ol. lini, ʒi.
Sig.: Shake before using.

To correct the disagreeable odor of the linseed oil a drop or two of bergamot may be added. Salicylic acid and salol though less energetic in their effects, act similarly to the carbolic acid. Thymol is also an admirable anti-pruritic,

but on account of its irritating effect can not be used when the skin is sensitive.

The author then dwelt on sensory stimulants, substitutive irritants, alteratives of cutaneous nutrition, and motor depressants. In pruritis hiemalis an all important measure of treatment is protection against cold. The sole cause of winter pruritus, aside from a special predisposing hyperæsthesia, is lowered temperature.

DR. JOSEPH ZEISLER of Chicago, Illinois, read a paper entitled

ANGIOKERATOMA,

and reported the following case. The patient was a German, and 53 years of age, butcher by occupation. Had never had any severe illness, but had malaria once. Present illness began somewhat gradually about four years ago with red spots and verrucæ on the skin of different parts of the body. He was under medical treatment and says he improved for a time. He states that some of the red spots gradually disappeared at times, but returned and new ones arose in different localities. During all this period his general health had not suffered in the least. No anorexia, headaches, nor any other complaint. There is no pain or itching in the skin lesions. Patches of vitiligo of large size are found on the front and sides of the abdomen and on the right side of the thorax. Some small patches in right axilla. Faint patches on right side of chest posteriorly and on the neck. Large patches on the penis and scrotum and small ones on the inner surface of the thighs. There are some old marks of tinea favus on the scalp. Nævus-like spots and small tumors are scattered over the body as follows: On posterior surface of right ear are two small warts, red in color and vascular; one on posterior aspect of left ear. On the ulnar surfaces of both forearms, beginning over the olecranon, are found red nævus-like patches of irregular contour and smaller isolated ones in the form of small pedunculated tumors. The patches vary in size from three or four inches in circumference to the size of a dime. They are red in color, vascular and slightly raised above surface of surrounding skin. On the right forearm are numerous small tumors varying in size from minute spots to some the size of a hazel-nut. The larger ones are all pedunculated, firm and vascular. On the left forearm they are fewer in number. Considerable œdema in the right hand and fingers. Only one or two small warts on the extensor surface. On palmar surface there are some on every finger except the index, and none on the wrist and ball of the thumb. One was removed and found to consist of an outer layer of thickened epidermis surrounding a very vascular center. Microscopical examination was made by Dr. Zeisler. Some of these tumors sprang out from beneath the finger-nails. On the left hand the verrucæ were not so numerous and inclined more to the small vascular variety with two exceptions. Large irregular red patches were also found over each patella, and a few smaller ones irregularly scattered over anterior aspect of the legs and thighs; also a few smaller ones over the posterior aspect of thighs and one over the back of each ankle. Two small peduculated warts were also found on the back of right leg, another with some of the red patches on the nates near the gluteal fold. No patches or tumors were found on abdomen, thorax or upper part of arms.

The author reported this unusual and interesting case to show that the clinical picture of the disease is evidently not yet quite complete, and hoped that new examples of the disease would arise which would throw more light on the pathology and etiology of the affection.

DR. J. A. FORDYCE of New York, read a paper entitled

A CONTRIBUTION TO THE PATHOLOGY OF ACNE VARIOLIFORMIS (HEBRA).

Dr. Fordyce called attention to the case described by Dr. Bronson and himself in 1891 under the title of "Acne Varioliformis of the Extremities," which was at that time shown to originate in or about the coil glands. This was identical with cases since reported by Politzer, Dubreuilh and others under the name of hydradenitis, and should go on record as an example of that affection. While clinically it presented many points of similarity to acne varioliformis (Hebra), its pathological anatomy was quite distinct.

The writer had examined microscopically a number of papules and papulo-pustules from two typical cases of the latter disease, and was able to trace its beginning to an inflammation about the middle and upper portions of the hair follicles and their sebaceous glands, while the coil glands were shown to be outside the inflammatory area. Enormous numbers of staphylococci were found in sections from one of the cases examined which readily stained with Kühne's carbolic-methyline blue solution. These organisms were especially numerous about the middle and deeper portions of the hair follicles and contained within the external and internal root-sheath, in the connective tissue about the coil glands and in the subcutaneous connective tissue. In considering their number, distribution and presence in the diseased area before the epidermis was involved, the writer was disposed to consider them a direct influence in producing the lesions. In a secondary infection they would scarcely be found at so early a period in the evolution o the papule.

As a result of his investigations, Dr. Fordyce concluded that acne varioliformis (Hebra) was an inflammation of the pilo-sebaceous system, of microbic origin, leading to destruction of these organs, and that Bazin was correct in naming the disease acne pilaris.

The members of the Association, at the close of Dr. Fordyce's paper, participated in a general discussion on pityriasis rosea, and pemphigus.

The following officers were elected: President, Dr. Robert B. Morison of Baltimore, Md.; Vice-president, Dr. George T. Jackson of New York; Secretary and Treasurer, Dr. Charles W. Allen of New York; Member-at-Large of the Council, Dr. J. A. Fordyce of New York.

On motion, the Association adjourned to meet in Washington, D. C., in May, 1894.

The Missouri Valley Medical Society, at its meeting held in Council Bluffs, Iowa, Sept. 22, elected the following officers:

President, Dr. A. F. Jonas of Omaha; first vice president, Dr. A. L. Wright, of Carroll, Ia.; second vice president, Dr Daniel Morton of St. Joseph, Mo.; treasurer, Dr. T. B. Lacy of Council Bluffs; secretary, Dr. F. S. Thomas of Council Bluffs. The next meeting place will be at Omaha.

The Cedar Valley Medical Society.—The annual meeting of the Cedar Valley Medical Society will be held in Dubuque, Iowa, Tuesday, October 10. Papers will be read by the following: Drs. J. W. Jaggard, Chicago, Ill.; J. S. Lewis, Dubuque; G. F. McDowell, Clear Lake; W. Woodbridge, Central City; E. C. Dudley, Chicago; A. R. Brackett, Nashua; E. Hornibrook, Cherokee; C. L. Whitmire, Waverly; H. C. Jungblutt, Sumner.

The meeting will be followed by a luncheon. Dr. I. S. Bigelow is president of the Society and Dr. W. B. Small, of Waterloo, is secretary.

The Southern Surgical and Gynecological Association will meet in New Orleans on the 14th, 15th and 16th days of November. The medical profession are cordially invited to attend. Dr. Bedford Brown of Virginia is president, and Dr. W. E. B. Davis of Birmingham, Ala., secretary.

ASSOCIATION NEWS.

We clip the following from our valued and always welcome contemporary, the *Occidental Medical Times:*

OREGON AND THE ASSOCIATION.—Dr. Plummer informs us that a member of the Association from Oregon writes to say that he wishes to present the different sections with a souvenir of their visit to the Pacific coast that shall be typical of the State of Oregon. This incident indicates the interest in the Association that is being rapidly developed, and augurs well for the success of the meeting.

THE SAN FRANCISCO COUNTY MEDICAL SOCIETY.—At the last meeting of the San Francisco County Medical Society, Dr. C. G. Kenyon, the President of the State Society, brought up the subject of the meeting of the Association in '94., After some discussion the Society appointed a committee to coöperate with the Committee of Arrangements of the Association.

COMING TO CALIFORNIA.—Dr. H. Bert Ellis of Los Angeles the Assistant Secretary of the Association, informs us that he is already constantly in the receipt of letters from members of the Association who are preparing to attend the meeting. He says that several of his correspondents want to come on in advance and stay all winter—we presume in Los Angeles.

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MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues and subscription for THE JOURNAL. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, OCTOBER 7, 1893.

THE PLACE OF ERGOT IN OBSTETRIC PRACTICE.

There is probably no therapeutic application of a drug so constantly carried out as the administration of ergot in obstetrics, and yet this being the case there is no doubt that in many instances it is wrongly administered because it is not needed, because it will do harm and finally because it is given at such a time that uterine contraction is voluntarily or artificially produced by other means before the ergot is absorbed, and so it exerts its action long after the object of the physician has been accomplished. On the other hand, as pointed out by BOHN in the JOURNAL of Sept. 23, 1893, there are very good reasons for this routine practice. It is positively certain that postpartum hemorrhage can almost always be avoided, even in feeble patients by its use, and in cases where there is no trained nurse in attendance and the doctor can not remain for some hours near his patient it must be given, without exception, if the safety of the case is to be assured and the physician is to have his mind at rest. In the discussion of the paper it will be remembered that DUFF expressed doubts as to the harmlessness of the routine use of ergot, as he had already done in a paper in the *Therapeutic Gazette*, in which he asserted that ergot was apt, by producing contractions of the uterine muscle at the cervix, to lock up débris which might when imprisoned produce septic trouble. Practically, however, we do not believe that such an accident is liable to occur. On the other hand, it is undoubtedly a fact that the contraction of the uterine walls produced by ergot, drives out of its cavity blood and other materials, and finally it is certain that these substances are more septic in themselves and are not readily changed to a septic state, unless the obstetrician has passed his hand or instruments into the cavity of the uterus and so infected them.

The rule which should govern the use of ergot in labor is hard to define. As with all rules governing the use of drugs, its application depends more upon the judgment of the physician than upon a written law. Ergot must not be used too early lest the child and mother be injured, neither must it be used too late. As it takes almost an hour for the dose to be absorbed, when given by the mouth, the influence of the drug on the uterus can not be felt for that period, and there is therefore no danger in giving the drug as soon as the physician is certain that labor will be over, at least so far as the truth of the head is concerned, in half to one hour. We therefore believe that ergot is to be used in almost every case where the physician can not be at hand the instant hemorrhage or uterine relaxation is threatened, and that the practice so generally followed is productive of an amount of good which far outweighs the few instances in which it may not produce the best of results.

PROPHYLAXIS OF CHOLERA—RAPID DISINFECTION.

At the session of the Academy of Medicine of Paris on the 19th of September, M. LE FORT presiding, M. BROUARDEL invited attention to the fact that at the preceding session M. BABÉS had read a memorial showing that in 1890 Roumania, contrary to other countries of Europe, had escaped the cholera epidemic, thanks to quarantines which, following the ancient system had been applied in all their rigor. This rigor had been such that they had not hesitated to shoot two persons who had tried to force the land quarantine. On the contrary, in 1893 when the quarantine had not been applied, Roumania had been invaded by cholera in the same measure as the neighboring countries. From this M. BABÉS has leaped to the conclusion that the Dresden conference had in suppressing land quarantines adopted a fatal measure. "It is not doubtful," said M. BROUARDEL, "that the suppression of quarantines, pure and simple, without replacing them by similar measures, more simple than the former, in effect exposes Europe to the cholera infection, but such is not the result of following the conference of Dresden."

In the presence of the great inconveniences of the quarantines, which permitted disinfection by aeration and, above all by time, it was asked if it were not possible to obtain the same result by means of rapid disinfection. It is easy to see that the existing measures adopted by the powers represented at Dresden, are precisely those which were the objects of the conference as indicated in the question proposed. These measures were pointed out to be such as disinfection by sterilizers, isolation of the sick, traveling card to be carried by well persons, etc. These statements of M. BROUARDEL are reassuring,

for they show that inspection is not proposed to be abandoned by the French, but only simplified and hastened.

EDUCATIONAL MODELS.

We print elsewhere a report by DR. BERLINER on the method of preparation of models which will be read with interest for, although originally printed a twelvemonth ago, the bringing of some of them to America as part of the German educational exhibit at the World's Fair, makes the description fresh and entertaining.

Teaching is but dry work without models or demonstrations, and one might as well undertake to teach practical anatomy by book, as pathology without diagrams and illustrations; as well also might the student learn the art of opera dancing by nightly observation of the ballet, as to learn the delicate handling of the scalpel without long practice on the cadaver. Our students require more practical training than ever, for it is not less true now than in the days of KING AGESILAUS, whose answer, when asked what a boy should learn, was, "that which they ought to do when they become men." Medical colleges have been rather slow in the adoption of the educational methods in use in other branches of learning, but they now seem pressing forward in the right direction and, as in agriculture, certain preparation of the soil must precede the planting, so the object lessons of the schoolroom prepare the mind of the student for the technical models of the medical school, and for the severer test questions of daily life, when school days are long past.

THE SANITARY MODE OF OATH ADMINISTRATION IN THE COURTS.

The *London Lancet* and the *Sanitary Record* have been foremost in counseling abandonment of the "kissing of the book" by witnesses in the courts of justice. It is practically an act of injustice, oftentimes, this long standing custom of bringing together, through the medium of the book, face to face and mouth to mouth, the cleanly and healthy, the uncleanly and infected. A physician of London has recently been the subject of considerable public comment for declining, on sanitary grounds, to take the book oath. The following is a condensed account of the recent occurrence taken from the *Pall Mall Gazette:*

"'Kissing the book' is likely before long to become one of the lost arts. Another objector to the practice has turned up in the West London Police Court in the person of Dr. Morris Wallace, called to give evidence in a case where one woman was charged with stabbing another in the eye with a fork. The doctor said he had no religious scruples, but he considered that there was a risk to health involved in putting to his lips a book which had already been kissed by other people. The magistrate suggested as a compromise kissing the inside of the volume. But here, too, the doctor objected 'on sanitary grounds,' and he was finally sworn by holding up the right hand."

This may be the beginning of a "reform movement;" and if so, it is only natural to see a medical man stepping to the front. Not a few of our medical acquaintance habitually adopt the oath by affirmation, instead of the traditional method, in regard to which, it is no slander to remark that it is more honored in the breach than in the observance.

MEDICAL EDUCATION.

The Illinois State Board of Health at its last meeting, decided to resume the publication of the reports on medical education. For the last two years, owing to various causes, none have been printed. DR. J. COLLINS WARREN, President of the Section of Pedagogy of the Pan-American Medical Congress, in his address, after reviewing the subject in this country, says:

"The reports on medical education by the Illinois Board, I do not hesitate to say have exerted a more powerful influence on the movement in education than any other publication which our medical literature has produced."

This is undoubtedly true. These reports were object lessons to the profession and to the schools, and presented truthfully the status of the colleges. DR. F. W. REILLY is now engaged in preparing the forthcoming report. He is eminently qualified for the task, having assisted in the preparation of nearly all the reports that were issued by the Board.

CHICKEN POX OR SMALLPOX.

The death of DR. THOMAS RICHARDS at North Brothers' Island of smallpox is very sad. It may be said to be the result of mistaken diagnosis, and carelessness upon his part in not being properly protected by vaccination. He contracted the disease from a case of supposed chicken pox that was brought before the Vanderbilt clinique, which afterward proved to be smallpox.

This is not the first time that a mishap of this character has occurred. It is simply impossible always in the early stages to differentiate these diseases. The man who says he can always diagnose a mild case of smallpox or varioloid has only encountered typical cases, or has had but a limited experience. Experience has taught that the only safe way is to treat such cases as suspects, and wait for development. Bringing uncertain cases of this character before classes during a clinique is unsafe, so long as all unexposed persons are unprotected by vaccination.

French Sanitary Commissioner at Constantinople.—Pursuant to a request from of the Ottoman Government M. Chartemesse has been sent by the French Government to preside at the inauguration of the measures of combating the cholera which has been active in that city.—*Bulletin Medical*, Sept. 20.

RUPTURE OF SMALL INTESTINE—LAPAROTOMY—ONE DEATH, TWO RECOVERIES.

BY H. C. DALTON, M.D.

ST. LOUIS.

Professor Abdominal and Clinical Surgery, Marion-Sims College of Medicine; late Superintendent St. Louis City Hospital.

Rupture of the intestines is so rare that I am sure the report of the following cases will prove of sufficient interest to the Association to justify me in taking up a few moments of your time. The cases particularly emphasize the urgent need of early interference in such injuries, if we would save our patients from rapid peritonitis and death.

CASE I.—RUPTURE OF JEJUNUM AND MESENTERY—LAPAROTOMY—DEATH.

J. W., æt. 22; laborer; entered the City Hospital in October, 1893. Twenty hours before admission, while stealing a ride on a freight train in Illinois, he fell from the top of the car striking his belly against the handrail in the descent. He was brought to the hospital at 1 P. M. next day. His temperature at that time was 103 F. Pulse 120 F. Percussion gave dullness in the dorsal gutters, and resonance anteriorly. He was at once prepared for laparotomy. Dr. H. H. Mudd, who was holding a clinic at the time, kindly assisted me in the operation. After thorough antiseptic precautions a median incision eight inches long, was made. The cavity was found full of clotted and fluid blood. The necessary handling of the intestine caused fresh bleeding which was at first thought to come from the liver, but a careful search revealed a complete transverse laceration of the jejunum at its spinal attachment, the end of the gut being separated to the extent of an inch or more. The mucous membrane was greatly everted. The tear extended an inch into the mesentery and owing to the depth of the rupture it was manipulated with great difficulty. The mesentery was closed on both sides with interrupted iron dyed silk sutures. An ordinary cambric needle two inches in length was used. The upper end of the gut was inserted into the lower and the serous surfaces brought together by the interrupted Lembert suture, a large number being required. The blood was washed from the cavity and the surgical wound closed. Drainage was not used. The patient never rallied from the shock, and died a few hours after the operation. I can but believe that this patient would have recovered had he been brought to the hospital the day before. The intestine was quite red though not adherent, peritonitis not having advanced sufficiently far to produce that effect.

CASE II.—RUPTURE OF JEJUNUM—LAPAROTOMY—RECOVERY.

John I., æt. 17; hostler; entered the City Hospital at 9 A. M. Feb. 8, 1892, a half hour after being thrown from a horse. The horse also fell and rolled over on the boy, boring the horn of the saddle into his belly. A scalp wound four inches in length was found three inches above the left ear, from which a considerable quantity of blood had escaped, sufficient to thoroughly saturate the patient's clothes. Although the patient admitted shortly after admission that he was suffering considerable pain in the abdomen, he afterwards denied it, referring all the pain to the scalp wound. I learned later that a patient in an adjoining bed had warned him that if he admitted having pain in the belly the doctors would "cut him open." Five or six hours after admission he reluctantly gave me the above history. Careful inspection of the abdominal surface failed to show the least bruise or abrasion, but deep pressure gave pain in the umbilical region, and percussion gave dullness over the left side of the belly. There had been considerable vomiting. His pulse was now 105 F., temperature 101.8 F.

The scalp wound had been cleaned and closed shortly after his entrance into the hospital. After thorough antiseptic precautions a medial incision five inches long was made. The small intestine was found collapsed. This was followed to the upper portion of the jejunum where a transverse rupture an inch and a quarter in length was found. Considerable blood and fecal matter was found in the left dorsal gutter. This was washed out with warm physiological salt solution. The wound in the gut was closed by interrupted iron dyed silk Lembert suture. A glass drainage tube, surrounded by iodoform gauze, was placed in the pelvic cavity and the belly closed. The tube was cleaned every hour for twelve hours. Then at increased intervals for four hours, after which it was removed.

The patient rallied nicely. His temperature for four days varied between 100 F. and 101 F., after which recovery was rapid.

At the time of the removal of the tube, an accident occurred which had happened in several of my previous cases, i. e., portions of the omentum had become strongly attached to the openings in the tube. I found it impossible to detach the omentum until I had excised the invaginated portion. The fistulous track left by the tube was filled with iodoform gauze, and a snug dressing applied. The patient was discharged well, March 20, twelve days after admission.

CASE III.—RUPTURE OF ILEUM—LAPAROTOMY—RECOVERY.

Peter M., æt. 20, was admitted into the hospital at 4 P. M., Nov. 20, 1891. Three hours prior to admission, while feeding a circular saw a piece of wood became detached, and with great force was thrown against his abdomen. In a few minutes he grew faint and was compelled to lie down. Vomiting soon developed, and pain became intense. When admitted to the hospital he was in great pain paroxysmal in character. Shortly after this he again vomited. His pulse was 116 F. and weak; hands and feet cold. The face wore an anxious expression. The respiration was hurried and superficial. Examination of the belly showed a very slight abrasion four inches in length, extending from right anterior superior spinous process to umbilicus. Percussion over this region gave a tympanitic note. There was also some swelling at this site, as well as great tenderness and pain on pressure. The urine was drawn and found normal, indicating an intact bladder. His rectal temperature was 105 F.

At 7:30 P. M., three and one-half hours after admission, I opened the belly. Prior to doing this, however, I had in the presence of Drs. French and L. I. Mathews (who were visiting me at the time), made the diagnosis of ruptured intestine. An incision four inches long was made in the right linea semilunaris which bisected the abraded portion about its middle. Upon drawing out the ileum a transverse rupture about an inch long was found. This was closed by five or six interrupted Lembert iron dyed sutures. The omentum was also stitched to the wound. A small quantity of fecal matter and a large quantity of peritoneal secretion was sponged from the cavity, after which it was closed without drainage, save a small piece of gauze which was left in the lower angle of the wound. This was removed on the second day with great difficulty owing to the firm adhesion of the gauze. Peritonitis had not developed.

There was some contusion and hematoma in the adjoining mesentery. The cavity was not irrigated, but the intestinal coils, while out of the belly, were washed with the salt solution. As in the preceding case, the small intestine below the rupture was collapsed. (This condition is almost always present in such cases as well as in intestinal obstruction.)

(An interesting feature of this case was that a Meckel's diverticulum was found a short distance below the rupture. It was an inch in length and about the same in width.) The wound healed by first intention, and the patient's recovery was rapid and uninterrupted. Flatus and feces passed for the first time on the second day.

I attribute the success in the last two cases to the early operation. I believe, in the hands of a careful surgeon, almost all such cases can be saved. Of course the main point is to make a correct diagnosis. The symptoms following the injuries to the abdominal viscera are usually sufficiently plain. I lay most stress upon the character of the pain. It is usually intense and paroxysmal in character. It is nearly always accompanied by vomiting.

Blows upon the abdominal wall, unaccompanied by rupture of the viscera rarely give rise to such

grave symptoms. Usually a soothing application and rest will give relief. If in spite of this simple treatment severe paroxysmal pain continues for some hours we may be sure, almost beyond doubt, that we have to deal with a grave condition for which laparotomy affords the only relief.

Should the injury cause internal hemorrhage, percussion of the dorsal gutters will give dullness and thus make the diagnosis more certain. Many such cases are lost by the so-called conservative surgeon waiting for symptoms of peritonitis. Symptoms of peritonitis mean peritonitis and the operation is then, in the vast majority of cases, followed by the usual result—death.

After such injuries the patient should be carefully watched for a few hours, and a few hours only. For my part I would rather make a mistake and operate immediately than to fail to operate in a single appropriate case. For in the inappropriate cases, a simple exploratory operation would rarely result in death, and would add but little to the gravity of the case, while delay in appropriate cases would almost certainly result in death.

I do not deny that blows on the abdomen may give rise to the described grave symptoms without visceral injury, but I do emphatically deny that such symptoms will continue for hours after the injury. I am also not unmindful of the fact that in grave visceral injuries patients have recovered without surgical interference, but I desire to ask the procrastinating surgeon how many he thinks would recover without such aid,—how many such cases he has seen? Should he tell of such cases I would be glad to ask him if he was sure his diagnosis was correct, and to give us the reason for his faith.

Cases of rupture of the liver and spleen are very much more liable to recover without surgical aid than rupture of the intestine or bladder. In cases of the former kind, (i.e., of the liver and spleen) unaccompanied by evidences of hemorrhage, an operation might be delayed many hours. In such cases the surgeon should not hesitate to operate as soon as he is well satisfied that the expectant plan will fail, and this means that he should do it before the development of peritonitis.

NECROLOGY.

Dr. Clarke of San Francisco, died Sept. 14, 1893.

Dr. George G. Shively of Waynesboro, died Sept. 20, 1893.

Dr. J. E. Roche of Chicago, died Sept. 29, 1893. The doctor's life was lost by an accident. His horse ran away and the vehicle upset, throwing him into the river. His body was not recovered for several days.

Dr. Walter Vought of New York City, died of typhoid fever September 24. He was a native of Buffalo, N. Y., and educated at Yale College, Columbia University, at Heidelberg and Vienna. He made nervous diseases the subject of special study, and was chief of clinic in that branch at the Vanderbilt Clinic. He was a member of the New York Academy of Medicine, Pathological and other scientific societies. In the summer of 1892, his name became a household word by reason of his having been appointed to the charge of the Fire Island station for cholera suspects. He was 31 years old at the time of his decease.

BOOK NOTICES.

A Dictionary of Medical Science.—Containing a full explanation of the various subjects and terms of anatomy, physiology, medical chemistry, pharmacy, pharmacology, therapeutics, medicine, hygiene, dietetics, pathology, surgery, bacteriology, ophthalmology, otology, laryngology, dermatology, gynecology, obstetrics, pediatrics, medical jurisprudence and dentistry, etc., etc. By ROBLEY DUNGLISON, M.D.. LL.D., late Professor of Institutes of Medicine in the Jefferson Medical College of Philadelphia. Edited by RICHARD J. DUNGLISON, A.M., M.D. New (21st) edition, thoroughly revised, greatly enlarged and improved, with the pronunciation, accentuation and derivation of the terms. In one imperial octavo volume of 1,181 pages. Cloth, $7.00; leather, $8.00. Philadelphia: Lea Brothers & Co., 1893.

In a recent issue we announced the early publication of the new edition of this great work and favorite American dictionary.

It now lies upon our table, and in examining it we are pleased to note, that all the old features that have made Dunglison's Dictionary so popular in the past have been retained. Many new improvements have been made, to bring the work up to date. No previous edition has witnessed so many additions and changes, in which the editor has apparently been greatly aided by the many dictionaries that have appeared since the last edition was issued.

A perusal of the book will convince any one, that the "Dunglison" will still retain its well earned place in the medical library for a long time to come, as a monument to American scholarship.

Bellevue Hospital and Its Internes.—A presentation copy of this interesting book, "An Account of Bellevue Hospital, with a Catalogue of the Medical and Surgical Staff from 1736 to 1894," is before us. It is from the De Vinne press, and faultless in its typographical dress. It is abundantly illustrated, and attractive beyond anything of a medico-historical nature that has hitherto fallen under our notice. About one-fourth of its letter-press is given up to the history of the hospital and about three-fourths are needed for the catalogue. The latter part is that which must necessarily have entailed the laborious efforts of the editor, Dr. Robert J. Carlisle, to gather together the records of a thousand or more names of practitioners who have gone forth from Bellevue's wards to the four corners of the earth. Dr. Carlisle has done his work patiently and fully, and he is to be congratulated if he has survived his labors and has his health. A number of good portraits adorn the book, among the best of which are the faces of the late Drs. Alonzo Clark and Henry B. Sands. The book is published under the auspices of the Society of the Alumni of the Hospital, which may be addressed at No. 5, West Fifty-eighth Street, New York City.

Alabama State Medical Association.—Transactions for 1893. The transactions of this Association appears in its usual well-written form, contains some excellent papers but, above all, shows the most careful organization of probably any State society in the United States. The report of the board of censors, annually published by this Association is unique. It includes the reports of the examinations made by each county board of censors of candidates for admission to practice, with the comment of the censors thereon, a roll of county societies, the annual oration and various interesting papers. The book is highly creditable to the Association and the publication committee. The secretary is Dr. Jas. R. Jordan of Montgomery, Ala.

New York State Medical Association.—Transactions for 1892. By all odds the most complete and comprehensive transactions that have reached our table thus far, are the trans-

actions of this Association, comprised in a handsome volume of 834 pages. It has been carefully edited for the Association by Dr. O. C. Ludlow of New York. The papers include the following: "President's Annual Address," by Dr. Judson B. Andrews of Erie County. "Pneumotomy for Relief of Tubercular Abscess and Gangrene of the Lung; Twice on the Same Patient," by Dr. John Blake White of New York County. "Traumatic Osteo-Arthritic Lesions which Involve the Proximal Segment of the Ankle Joint; Their Pathological Anatomy and Treatment," by Dr. Thomas H. Manley of New York County. "Muscular Traction for Hip Joint Disease," by Dr. Thomas M. Ludlow Chrystie of New York County. "Some Recent Cases of Appendicitis," by Dr. Nathan Jacobson of Onondaga County. "Ectopic Pregnancy," by Dr. Henry D. Ingraham of Erie County. "Antiseptic Vaginal and Intra-Uterine Injections Unnecessary, if not Injurious, in the Daily Practice of Obstetrics," by Dr. Darwin Colvin of Wayne County. "The Palliative Treatment of Such Cases of Cancer of the Uterus and Its Adnexa as are not Amenable to Radical Operative Measures," by Dr. J. E. Janvrin of New York County. "A Case of Puerperal Eclampsia at the Seventh Month, With a Few Thoughts from Practical Experience as to Treatment," by Dr. Douglas Ayres of Montgomery County. "Tumors of the Orbit. A Detailed Account of Nineteen Cases Illustrating the Paper on the Same Subject Presented to the New York State Medical Association at Its Meeting in 1891," by Dr. Charles Stedman Bull of New York County. "Paraplegia," by Dr. Charles W. Brown of Washington, D. C. "The Question of Maternal Impressions," by Dr. H. S. Williams of New York County. "Clinical Contributions to the Subject of Brain Surgery," by Dr. Roswell Park of Erie County. "A Plea for the Early Extirpation of Tumors," by Dr. John W. S. Gouley of New York County. "Remarks on a New Method of Intestinal Anastomosis," by Dr. Benjamin M. Ricketts of Cincinnati, Ohio. "A Report of Some Cases of Compound Depressed Fracture of the Skull," by George D. Kahlo of Indiana. "The Achievements of American Surgery," by Dr Frederic S. Dennis of New York County. "Memoranda, Practical and Suggestive," by Dr. H. D. Didama of Onondaga County. "Acute Pleurisy," by Dr. Frank S. Parsons of Northampton, Mass. "A Clinico-Pathological Study of Injuries of the Head, With Special Reference to Lesions of the Brain Substance," by Dr. Charles Phelps of New York County." The Etiology of Gastric Ulcer," by Dr. Charles G. Stockton of Erie County. "The Examination and Commitment of the Public Insane in New York City," by Dr. Matthew D. Field of New York County. "Mitral Stenosis in Pregnancy," by Dr. Zera J. Lusk of Wyoming County. "The Use of Electricity in Midwifery," by Dr. Ogden C. Ludlow of New York County. "The Rôle of Microbes in Disease," by Dr. N. B. Sizer of Kings County. "Abdominal Hysterectomy for Myoma," by Dr. Frederick A. Baldwin of New York County. "Extraction of Steel from the Interior of the Eye with the Electro-Magnet," by Dr. Alvin A. Hubbell of Erie County. "The Mental Symptoms of Fatigue," by Dr. Edward Cowels of Somerville, Mass. "A Review of Some Injuries of the Upper Extremity," by Dr. E. M. Moore of Monroe County. "Fractures of the Patella Treated by Continuous Extension; Patients not Confined to Bed." by Dr. Josehh D. Bryant of New York County. "Winter Cholera in Poughkeepsie," by Dr. James G. Porteous of Dutchess County. "Suggestions Relating to Improvement of Quarantine," by Dr. Stephen Smith of New York County. "The Limit of Responsibility in the Insane," by Dr. John Shrady of New York County. "Some Personal Observations and Reflections upon Alcoholism, the Effects of Alcoholic Abuse upon Posterity, and the Treatment of Alcoholism." by Dr. H. Ernst Schmid of Westchester County. "Climatology in Its Relation to Disease," by Dr. S. J. Murray of New York County. "Pelvic Version," by T. J. McGillicuddy of New York County. "Should We Treat Fever," by Dr. S. T. Armstrong of New York County. "Brief Comments on Materia Medica, Pharmacy and Therapeutics of the Year Ending November 1, 1892," by Dr. E. H. Squibb of Kings County. "Dermic and Hypodermic Therapeutics," by Dr. S. F. Rogers of Rensselaer County. "Some Recent Experience in Renal Surgery, by Dr. E. D. Ferguson of Rensselaer County. "The Treatment of Neglected Cases of Rotary Lateral Curvature of the Spine," by Dr. Reginald H. Sayre of New York County.

The Necrology Record includes memoirs of the following deceased Fellows: Drs. Abram Du Bois, M. Calvin West, Myron N. Babcock, Lucien Damainville, Nathaniel Clark Husted, James Ferguson and William Chace.

The Association is to be congratulated on this magnificent volume. It is apparent to the most superficial observer that the organization of the Association nine years ago by those who adhere to the regulations of the American Medical Association have well performed their part. E. D. Ferguson, M. D. of Troy, N. Y. is the secretary.

Pennsylvania State Medical Society.—Transactions for 1893. The transactions of this Society are comprised in a handsome volume of 288 pages, containing the minutes, the annual oration and the papers read at the meeting. The volume contains papers by such well-known authorities as Price, Shoemaker, Roberts, Tyson, Dixon and Mills. Several of the papers are handsomely illustrated, and the book is well printed. Wm. B. Atkinson, M. D. of Philadelphia is secretary.

DOMESTIC CORRESPONDENCE.

Antisepsis as She is Taught.

Cleanliness is next to godliness.

To the Editor:—Some of the requirements of modern antisepsis, "such as shaving the pubes, sealing vagina and anus, and banishing paterfamilias, ante partum" must impress the veteran obstetrician much as the swallow-tail coat and standing collar did an untutored savage in process of civilization. Delighted and tractable he was until he came to put on these articles of apparel, when suddenly disrobing he resumed his war paint and feathers and with a "whoop" disappeared in the bush. C. M. Fenn, M.D.

San Diego, Sept. 18, 1893.

MISCELLANY.

The Health of the British Army.—The report of the British Army Medical Department for the year 1891 has recently been issued. The delay in its appearance is allowable when it is considered that reports have to come in from all parts of the world before the consolidation in the office of the director general can be made. In turning over its pages the tabulated statistics naturally attract our attention first; and we are gratified to find that in the presentation of our own army medical statistics our military brethren are in no ways behind those of her Majesty's service. We observe that the latter purport to give the rating of sickness under certain specified conditions of disease for the year and the average ratios for the previous ten years; but as a matter of fact the average ratios are given only for the years 1886-90, and a note at the bottom of each page of the tabulations announces that "the average ratios for ten years will be given in future years. The average ratios for the six years, 1886 to 1891, will be given in the report for 1892; those for the seven years, 1886 to 1892, in that for 1893, etc." The reports of the surgeon general of the United States army for several years back have given the ratios for the preceding decade that the value of the ratios for the year reported may be appreciated the more readily. Again, the tables of the United States reports give the data for a larger number of specified diseases than are found in that now before us. By way of illustration, the

latter furnishes us with the rates for diseases of the respiratory system in gross, while the former specifies the rates of catarrhs and common colds, bronchitis, pneumonia, pulmonary phthisis and pleurisy, and bundles up by themselves only the remaining unspecified diseases of this system. Similarly, our tables give much more information as to the prevalence and severity of wounds, accidents and injuries.

The strength of the British army was in round numbers 200,000 men; half of these men were on the home stations, and two-thirds of the other half in India. Malta and Gibraltar were the largest of what may be called the small military settlements, the former with nearly 8,000 and the latter with 5,000 men. Canada had only 1,500.

The admissions on sick report of the home service troops amounted to 772.2 per thousand of strength. This seems to intimate that there was much less sickness among these men than in our army during the same period, for our admission rate was 1364.78 per thousand; but notwithstanding their relatively small number of cases our British friends had 41.66 men constantly sick while we had only 42.01. The average duration of each case was with them 19.69 days, with us 11.2 days. It is seen, therefore, that the admission rate means little. Our medical officers place men on sick report for trivial disorders that do not meet with official recognition in the British army. The non-efficient rate, based on the number constantly sick, is the proper rate for measuring the relative amount of sickness in different armies, and as these rates are 41.66 and 42.01, our disability during the year must be regarded as practically the same as theirs, notwithstanding their smaller number of cases. Their death rate was 4.94, ours 8.05; but the latter includes the men who were killed in the Sioux campaign. Their rate of discharge for disability was 14.51, ours 17.23.

When we consider that the 100,000 men who furnished these statistics were stationed on what in this country would be called fancy duty, we have reason to be gratified with the comparison, for many of our men during the year were exposed to all the discomforts and insanitary conditions incident to a state of war. When the British troops on foreign stations are brought into the calculations the general death rate of their army rises to 9.13, and the constantly non-effective from sickness to 55.86. Their heaviest death rate was reported from the Mauritius, 25.87, half of which was caused by enteric fever. India gave 16.36, the main factors enteric fever and cholera, and the West Indies 13.69, in part due to yellow fever. The highest non-effective rate was given by the troops in the Straits settlements, 93.48, more than half of it the result of venereal diseases. India had 80.22 constantly sick and the West Indies 75.53.

But it is with the record of the home service troops that we are chiefly interested, as permitting us to compare the morbility among our own troops with that of men who are stationed in a healthy climate and have the best medical and sanitary care. Enteric fever caused only 1.1 admissions per thousand of strength, as compared with 3.95 in the United States, but in considering these rates it is to be remembered that a large number of other continued fevers were reported in the United Kingdom many of which would probably have been called typhoid fever in this country. As in previous years, the station at which there were most cases of enteric fever was Dublin. Influenza prevailed as much in Britain as in the United States. Although the opinion is generally entertained in this country that drainage and efficient cultivation have banished malarial fevers from the British Isles, we find that there were 1.8 admissions in Scotland, 3.0 in Ireland and 9.6 in England and Wales. The greatest prevalence in the United States was 546.05 in Oklahoma, but the average of the army was only 62.63. If the sickness from all forms of venereal disease is taken together the British admission rate amounted to 197.4, and the constant sick to 15.34. Our figures compare favorably with these, only 72.46 admissions and 5.00 non-efficient; but if all our garrisons were in the neighborhood of cities, as are most of the English stations, it is possible our rates might be as high as theirs, for their highest admission rate, 280.0, in the Channel Islands, was nearly equaled by our recruits at Columbus Barracks, Ohio, who had a rate of 266.66. It is alcoholism, however, that must be regarded as the special vice of our troops when compared with the British, if any faith may be placed in the statistics. Only 2.4 admission were recorded, while the United States rate was 40.01. We know that our men go on sick report when they are suffering from the effects of dissipation, but the figures fail to give us any idea of how this may be in the English ranks. We have recognized already that their trivial cases are not taken on the sick report, and a little cerebral congestion or gastric irritability due to the conviviality of the evening before may be regarded as one of the trivial cases. The admission rate for injuries was 105.1, and the mortality .70, as compared with 248.91 and 3.02 in the United States. They had a total of 19 deaths from gunshot wounds in their 100,000 men; we had 87 among our 25,000; they had 27 deaths from drowning, we 18; they 25 suicides, we 22; all of which seems to indicate that on home service Tommy Atkins has a quieter and easier life than he would have if he emigrated and took service under the stars and stripes. Out of a total of 35,678 operations of vaccination of soldiers 68.31 per cent. gave perfect results, 18.87 per cent. gave modified results, 12.82 were failures.

Of 6,132 recruits inspected 37.88 per cent. were rejected. We are more exacting in our requirements, for of 25,050 candidates we rejected 63.84 per cent. The average British recruit is young and undeveloped, age 19.6 years, height 65.6 inches, weight 122.3 pounds, and chest measurement 33.4 inches. On account of our short term of enlistment and the inclusion of our reënlisted soldiers in the list of accepted men, our average recruit is a much better man. Age 24.43; height 67.43 inches; weight 145.35 pounds; circumference of chest at expiration 34.16 inches; at inspiration 37.02 inches.

In the appendix to the Report Brigade, Surgeon Lieut.-Colonel J. Lane Notter reviews the progress of hygiene for the year 1892. He speaks highly of the work of the Massachusetts Board of Health, and cites from a paper by Mr. Fuller on the differentiation of the bacillus of typhoid fever in water. The method of Dr. Theobald Smith for distinguishing the typhoid bacillus is also given. Special note is made of the efforts in France to reduce the prevalence of enteric fever in the army by the substitution of pure for polluted water, or in default of this, by subjecting the impure water to a filtering process by the Chamberland filter. Wherever an epidemic broke out the water supply was found to be contaminated. In 1867 the enteric fever cases numbered 6,881; since then they have been reduced 52 per cent. The filter is composed of Chamberland bougies, system Pasteur, placed in concentric circles in the inside of a metallic reservoir capable of receiving water under a pressure of three atmospheres. For a company of infantry a filter of twelve bougies is allowed, with a reservoir having a capacity of 150 liters. The officers of the medical department are responsible for the proper working of the filters.

Epidemic of Typhoid in Allegheny, Pa.—An epidemic of typhoid fever has broken out in lower Allegheny and invaded the Western Penitentiary. Two deaths in two days occurred in the prison. Eighteen other prisoners are in the hospital suffering with the disease and some may not recover. Outside the prison there are scores of cases. The drinking water pumped from the Allegheny River is given as the cause of the epidemic.

New Hospital at Kansas City.—The University Medical College of Kansas City, have leased All Saints' Hospital, and organized a new staff. Dr. B. E. Fryer is President of the Board of Managers.

The New City Hospital at Minneapolis was opened for occupancy October 1.

Health of New York.—During the month ending September 30, the lowest mortality thus far of the year 1893 was reached in the city of New York. The total number of deaths reported was 678, which is 53 below the average of the corresponding weeks of the past five years, and represents an annual death rate of only 18.54 for each thousand of the estimated population. Notwithstanding the generally improved condition of the health of the city, however, there was an increase of seven over the previous week in the number of deaths from smallpox, which amounted to ten. On account of the increase in this disease the health department is making use of extraordinary precautions, and has just secured from the Board of Estimate and Apportionment the appropriation of $3,000 for the payment of fifteen extra physicians to serve in the free vaccinating corps. Dr. Nagle, registrar of records of vital statistics, reports that epidemic influenza has again made its appearance in the city, a month earlier than last year. During the week two deaths were recorded as due to this cause, and they are the first reported from la grippe since the week ending July 1, when there were also two fatal cases. Last year the first death from it was reported October 29, and up to the close of the year the deaths amounted to twenty. From January 1 to July 1 there were 182 deaths. During the week there were thirteen deaths from typhoid fever, two from scarlet fever, twenty-three from diphtheria, four from cerebro-spinal meningitis and eight from measles.

A Simplified Formula for a Much Litigated Article.—A nostrum that has been much in the papers and much in the courts, and is nevertheless still doing a considerable business, it is said, is the subject of an exposure in the *Druggists' Circular and Chemical Gazette*. The object of the article is to present a prescription which, while not coming in conflict with the patent rights of any microbe destroyer, will have all the desired or desirable potency. It has been declared by Dr. Eccles of Brooklyn, in the journal above named, that the Radam's Microbe Killer contains sulphuric acid for its main support in the realm of germ-slaying. The prescription, simplified from the analyses of Eccles and others, reads as follows:

Sulphurous acid, U. S. P., four ounces; sulphuric acid, commercial, four drachms; muriatic acid, two to ten drops; red wine, one ounce; water, sufficient to make one gallon.

In former analyses, the muriatic acid had been found in larger proportions. That was "one of the best of the ingredients," as Dr. Eccles reported in 1889, whereas now it is almost eliminated and sulphurous acid has taken its place. Dr. Eccles states later that he is informed that the formula used by the Canadian branch excludes the red wine, one ounce to the gallon.

Pigmentation Treated by Tattooing.—According to Dr. Paschkis, in the *Archiv für Dermatologie and Syphilis*, Heft. 3, 1893, tattooing may be made use of in the relief of pigmentations of the skin. The material chiefly used by him has been baryta-white, which latter may be toned to the color of the surrounding integument by a judicious admixture of browns and reds. A little experience, with a good eye for color, will bring about a considerable improvement of the unsightly parts.

Dr. Ohmann-Dumesnil of St. Louis, has shown that tattooing may be removed by tattooing. His method involves a new principle; namely, the digestion of the subcutaneous pigments by papoid. The tattooed parts having been well washed with soap and water, a bunch of cambric needles—six or eight—bound together with silk thread is used. This medical tattooing implement is dipped in glycerol of papoid, and driven with a sharp blow into the tattooed part. This is repeated over the entire stain, and must be thorough to be effective. A peculiarity about this method is that it causes no inflammatory reaction observed in tattooing with Indian ink or other pigments. Dr. Ohmann-Dumesnil considers that the digestive principle of the papoid is disseminated about the deposit of pigment thus liberating it. A portion is absorbed, in a finely divided state, by the lymphatics; another part probably finds its way into the upper layers of the epidermis and thence to the surface; and in this manner the pigment disappears.

Elected Mayor of Woodward.—Dr. Melton of Denver, Colo., was one of the "boomers" that went to the Cherokee strip, and when the land was thrown open to settlement and the people had selected their locations and erected their tents a municipal government was organized by the election of Dr. Melton of Denver, as mayor; Attorney Laune of Denver, city attorney, and a board of aldermen consisting of five members, three from Denver, and two from Texas. On Sunday two services were held, and Woodward has started on its career with as good and even better prospects than any settlement in the strip. Following precedent, a new medical society and medical journal will doubtless soon be added to the attractions of the infant city.

The Anti-Rheumatic Ring.—A writer in *Science Siftings* says that two thousand years ago the Greeks believed that there was virtue in finger rings as against rheumatism. Galen, in the second century, gave heed to some of the popular fancies of that day, and recommended a ring of jasper with an intaglio of a male figure wearing about his neck a bunch of herbs. Marcellus, in the time of Marcus Aurelius, prescribed a ring of pure gold, with certain Greek letters inscribed thereon, to be worn for pain in the side; the circlet was directed to be worn on the side opposite to the pain. The decrease of the moon was propitious to the plan of cure. "And these rings," says the writer, "had quite as much medical value as those that are now being sold for the relief of rheumatism."

Bequests to New York Hospitals.—The will of the late Hon. Hamilton Fish provides that St. Luke's Hospital shall receive $5,000, and the Bellevue Training School for Nurses $2,000. These are gifts additional to former ones made during the lifetime of the donor.

Fatality Following the Administration of Chloroform.—A death after chloroform occurred at the Methodist Episcopal Hospital at Brooklyn, N. Y. The patient, an adult male, had been brought to the hospital for the reduction of a dislocation of the arm, due to a fall from a wagon. Full anesthesia had not been induced before syncope set in, which could not be removed by the restoratives used.

Examinations of Manitoba University Medical Department.—The program of examinations is as follows:

Wednesday, Sept. 20—9-12 A. M. Algebra, med. entrance and previous supp.

2-5 P. M. Canadian hist. and geog., med. entrance and previous supp. chemistry.

Thursday, Sept. 21—Euclid, med. entrance and previous supp.

2-5 P. M. Arithmetic, med. ent. and Latin, prev. supp.

Friday, Sept. 22—9-12 A. M. Physics, med. ent., trig., prev. and pass.

2-5 P. M. Latin, Virgil, med. ent., French, previous statics, pass.

Saturday, Sept. 23—9-12 A. M. Latin, Cæsar, med. ent.

2-5 P. M. Botany, med. ent.

Monday, Sept. 25—9-12 A. M. Grammar and rhetoric, 1½; composition, 1½.

2-5 P. M. Optional subject, poetical literature.

Dr. J. L. Wilcox of Springfield, Ill., has been recently appointed Collector of Internal Revenue for the Pekin district.

A Cottage Hospital is to be built at Woodstock, Ont., at a cost of $10,250.

THE PUBLIC SERVICES.

HEADQUARTERS OF THE ARMY, ADJUTANT GENERAL'S OFFICE
WASHINGTON, September 22, 1893.

GENERAL ORDERS, No. 78.

By direction of the Secretary of War, upon the recommendation of the Surgeon General of the Army, the faculty of the Army Medical School, established by General Orders, No. 51, June 24, 1893, from this office, and regulations for the government of the school are announced as follows:

FACULTY OF THE ARMY MEDICAL SCHOOL.

Colonel Charles H. Alden, assistant surgeon general U. S. Army, pres-

ident of the faculty, and lecturer on the duties of medical officers.

Lieutenant Colonel William H. Forwood, deputy surgeon general, U. S. Army, professor of military surgery.

Major John S. Billings, surgeon, U. S. Army, professor of military hygiene.

Major Charles Smart, surgeon, U. S. Army, professor of military medicine and director of the chemical laboratory.

Captain Walter Reed, assistant surgeon, U. S. Army, professor of clinical and sanitary microscopy and director of the pathological laboratory.

Captain Julian M. Cabell, assistant surgeon, U. S. Army, assistant to professor of military surgery and instructor in Hospital Corps drill.

THE COURSE OF INSTRUCTION.

"The course of instruction will be for four months, and will be given annually at the Army Medical Museum, in Washington City, commencing on the 1st day of November." It will include lectures on and practical instruction in—

1. The duties of medical officers in war and peace.

2. Military surgery, the care of the wounded in time of war, and hospital administration.

3. Military hygiene.

4. Military medicine.

5. Microscopy, sanitary and clinical; pathological histology, bacteriology, and urinology.

6. Hospital Corps drill, and first aid to wounded.

By permission of the Surgeon General medical officers of the Army who desire to avail themselves of the course of instruction, and who are stationed in or near the city of Washington or who have a leave of absence which enables them to attend the course, may be admitted as pupils under the same regulations as apply to recently "approved candidates for admission to the Medical Corps of the Army."

EXAMINATIONS.

At the termination of the course of instruction the "approved candidates for admission to the Medical Corps of the Army" will be examined by the several professors, and their relative proficiency in each branch will be reported by the president of the faculty to the Secretary of War through the Surgeon General of the Army.

REGULATIONS.

1. The president of the faculty will be responsible for the discipline of the school.

2. The junior professor will act as secretary and will be responsible for all property pertaining to the school.

3. A faculty meeting will be held in the office of the secretary on the first Monday of each month from October to March, inclusive, and whenever called by the president of the faculty or the Surgeon General of the Army.

4. Resolutions adopted by the faculty relating to the course of instruction, the purchase of books and instruments, etc., will be submitted to the Surgeon General of the Army for his approval.

5. The president of the faculty will submit to the Surgeon General of the Army, on or before the 1st day of April of each year, a detailed report of the condition of the Army Medical School, including an account of the instruction given and the proficiency of the several pupils as shown by an examination made by each professor at the termination of his course.

6. The hours of instruction will be from 9 to 12 A. M., and from 1 to 4 P. M., daily, from November 1 to February 28, inclusive, with the exception of Saturdays, Sundays, legal holidays, and the week commencing December 25.

7. Pupils will be required to be present during the hours designated unless specially excused by the president of the faculty or by orders from the War Department.

8. When necessarily absent on account of sickness or other emergency, pupils will, as soon as practicable, send a written statement to the secretary of the faculty, explaining the reason for such absence.

9. The laboratories and library of the Army Medical School will be open for the use of pupils during the hours of instruction designated.

10. Pupils will be held strictly accountable for all instruments and apparatus issued to them for their personal use during the course of instruction, and for any loss or injury to books or apparatus belonging to the Army Medical School, when such loss or injury is due to carelessness or neglect.

11. Pupils in the Army Medical School, during the hours of instruction, will wear the undress uniform of the grade to which they belong, except when engaged in laboratory work, when a black cambric laboratory gown may be worn.

By command of Major General Schofield:

R. WILLIAMS, *Adjutant General.*

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from September 23, 1893, to September 29, 1893.

Lieut.-Col. FRANCIS L. TOWN, deputy Surgeon General U. S. A., is granted leave of absence for four months, on surgeon's certificate of disability. By direction of the Secretary of War.

First Lieut. CHARLES F. KIEFFER, Asst. Surgeon, is relieved from further duty at Ft. Meade, S. D., and from temporary duty at Ft. Yellowstone, Wyo., and will report to commanding officer at Ft. Assiniboine, Mont., for duty.

First Lieut. WM. F. LEWIS, Asst. Surgeon, will, upon being relieved from duty at Ft. Assiniboine, Mont., by Lieut. KIEFFER, report to commanding officer, Ft. Apache, Ariz., for duty.

First. Lieut. BENJAMIN BROOKE, Asst. Surgeon, will proceed at once from Ft. Leavenworth, Kan., to Ft. Brady, Mich., for temporary duty during the absence on leave of Asst. Surgeon PAUL CLENDENIN, U. S. A.

Capt. PAUL CLENDENIN, Asst. Surgeon U. S. A., is granted leave of absence for one month, to take effect from the arrival of Asst. Surgeon BENJAMIN BROOKE.

Marine Hospital Changes. Official list of changes of stations and duties of medical officers of the U. S. Marine Hospital Service, for the six weeks ended September 16, 1893.

Surgeon R. D. MURRAY, to proceed to Pensacola, Fla., for temporary duty, August 10, 1893. To rejoin station, August 18, 1893. To proceed to Brunswick, Ga., for temporary duty, September 14, 1893.

Surgeon P. H. BAILHACHE, to assume charge of inspection of immigrants, August 14, 1893. Detailed as chairman of board for physical examination of keepers of life saving stations, August 18, 1893. Relieved from duty as inspector of immigrants, August 22, 1893. Detailed as chairman of board for physical examination of officers Revenue Marine Service, September 12, 1893.

Surgeon GEORGE PURVIANCE, to report at Bureau for temporary duty, August 6 and 10, 1893. Detailed as chairman of board for physical examination of Surgeon JOHN VANSANT, August 28, 1893.

Surgeon JOHN VANSANT, ordered before board for physical examination, August 31, 1893.

Surgeon W. H. H. HUTTON, to report at Brunswick, August 10, 1893. To proceed to Cape Charles Quarantine as inspector, August 12, 1893. To proceed to Brunswick, Ga., for temporary duty, August 12, 1893. To rejoin station, Detroit, Mich., September 10, 1893.

Surgeon JOHN B. HAMILTON, granted leave of absence for four days, August 16, 1893. Granted leave of absence for ten days, August 29, 1893.

Surgeon H. W. SAWTELLE, detailed as member of board for physical examination of life saving stations, August 18, 1893. Detailed as member of board for physical examination of P. A. Surgeon H. T. GOODWIN, August 22, 1893. Detailed as member of board for physical examination of officers, Revenue Marine Service, September 12, 1893.

Surgeon H. W. AUSTIN, detailed as recorder of board for physical examination of Surgeon JOHN VANSANT, August 28, 1893. To represent the Service at meeting of Pan-American Medical Congress, September 5, 1893.

Surgeon J. M. GASSAWAY, to inspect local quarantine at Pascagoula, Miss., August 23, 1893.

Surgeon F. W. MEAD, to proceed to Chicago, Ill., for temporary duty, August 9, 1893.

Surgeon H. R. CARTER, to proceed to Fernandina, Fla., to inspect quarantine, and return to Bureau, August 7, 1893. To proceed to Pensacola, Fla., August 10, 1893. To proceed to Brunswick, Ga., for temporary duty, August 12, 1893. To report at Bureau, August 21, 1893. To represent the Service at Pan-American Medical Congress, September 5, 1893. To proceed to Philadelphia, Pa., and Reedy Island Quarantine, September 9, 1893. To proceed to Cape Charles Quarantine and assume command, September 11, 1893. To report at Bureau for temporary duty, September 13, 1893.

Surgeon W. A. WHEELER, detailed for duty at Camp Low, August 14, 1893. To rejoin station, August 22, 1893. Detailed as recorder of board for physical examination of P. A. Surgeon H. T. GOODWIN, August 22, 1893.

P. A. Surgeon D. A. CARMICHAEL, granted leave of absence for thirty days, August 16, 1893.

P. A. Surgeon C. T. PECKHAM, granted leave of absence for twenty days, August 10, 1893.

P. A. Surgeon A. H. GLENNAN, to proceed to Reedy Island Quarantine for temporary duty, August 30, 1893.

P. A. Surgeon G. M. MAGRUDER, to proceed to Pensacola, Fla., as inspector, August 10, 1893. To proceed to Brunswick, Ga., for temporary duty, August 23, 1893. To proceed to Beaufort, S. C., as inspector, September 9, 1893.

P. A. Surgeon J. J. KINYOUN, detailed as inspector, New York Quarantine, August 12, 1893. Detailed as member of board for physical examination of P. A. Surgeon H. T. GOODWIN, August 26, 1893.

P. A. Surgeon H. T. GOODWIN, granted leave of absence for thirty days, August 10, 1893. To proceed to Louisville, Ky., for duty, August 15, 1893. Ordered to appear for examination as to physical condition, August 22, 1893.

P. A. Surgeon G. T. VAUGHAN, to represent Service at meeting of Pan-American Medical Congress, September 5, 1893.

P. A. Surgeon H. D. GEDDINGS, to report at Bureau for temporary duty, September 13, 1893. To proceed to Brunswick, Ga., for temporary duty as inspector, September 15, 1893.

Asst. Surgeon L. E. COFER, to proceed to Savannah, Ga., for duty, August 25, 1893.

Asst. Surgeon C. E. DECKER, to proceed to San Francisco Quarantine for temporary duty, September 3, 1893.

Asst. Surgeon J. A. NYDEGGER, to proceed to Jersey City, N. J., for temporary duty, September 2, 1893. To rejoin station, September 9, 1893.

Asst. Surgeon J. H. OAKLEY, to proceed to Quebec, Canada, for duty, August 26, 1893.

Asst. Surgeon SEATON NORMAN, to proceed to New York City for temporary duty, August 18, 1893. To rejoin station, August 23, 1893. To proceed to Jersey City for temporary duty, September 3, 1893. To rejoin station, September 9, 1893.

Asst. Surgeon E. K. SPRAGUE, to proceed to Cairo, Ill., for temporary duty, August 26, 1893.

LETTERS RECEIVED.

(**A**) Ayer, N. W. & Son, Philadelphia, Pa.; Alma Sanitarium Co., Alma, Mich.; Ashum, G. C., Cleveland, O.; (**B**) Bane, Wm. C., Denver, Col.; Breedlove, J. W., Ft. Smith, Ark.; Berna, Henry, St. Louis, Mo.; Bates, J. H., Adv. Agency, New York, N. Y.; (**C**) Cone, Andrew, New York, N. Y.; (**D**) Daeuble, Louis, Allegheny, Pa.; Drevet Manf. Co., New York, N. Y.; Dunlap, H. M., Battle Creek, Mich.; Davis, W. E. B., Biermingham, Ala.; Denison, Chas., Denver; (**E**) Eastman, Jas, Indianapolis, Ind.; (**G**) Gish, Dr., Jacksonville, Mich.; Gapen, Clark, Kankakee, Ill.; (**H**) Hills, A. K., New York, N. Y.; Hamilton, W. D., Columbus, O.; Hopkins, F. S., Thomasville, Ga.; Hare, H. A. Philadelphia, Pa.; Hibberd, Jas. F., Richmond, Ind.; Hazlewood, A., Grand Rapids, Mich.; (**T**) Truax, J. G. New York; (**L**) La Garde, L. A., Chicago, Ill.; Lambert Phar. Co., St. Louis, Mo.; (**M**) Mercer, A. C., Syracuse, N. Y.; Mason, L. D., Brooklyn, N. Y.; Murphy, S. H., Battle Creek, Mich.; Mettler, L. H., Chicago, Ill.; Marshall Ptg. Co., Marshalltown, Ia.; Merrill, N., Gladbrook, Iowa; (**N**) Niles, S. R., N. Adv. Agency, Boston, Mass.; Norbury, F. P., Jacksonville, Ill.; (**P**) Parke, Davis & Co., Detroit, Mich.; Philadelphia Policlinic, Philadelphia, Pa.; Parkinson, J. H., Sacramento, Cal.; Price, Joseph, Philadelphia, Pa.; (**S**) Shimonek, F. Milwaukee, Wis.; Sanford, A. N., San Francisco, Cal.; (**T**) Taylor, H. L., New York, N. Y.; (**V**) Voldeng, N. M., Independence, Iowa; (**W**) White, J. A. Richmond, Va.; White, M. S., So. Omaha, Neb.; Warner, W. R., & Co., Philadelphia, Pa.; Walker Pharmacal Co., St. Louis, Mo. Wilson, W. G. Shelbyville, Ill.; Woolsey, F. E., Plainwell, Mich.; Wilkinson, A. D., Denison, Iowa; Webb, J. H., Sheridan, Ind.